



**MOTOROLA**

ASTRO™  
Radio Platform  
Radio Service Software  
User's Guide  
Software Part Number: CVN-6085A

## Computer Software Copyrights

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

## Licensing Restrictions

The installation program used to install ASTRO™ Radio Service Software, INSTALL, is licensed software provided by Knowledge Dynamics Corp., P.O. Box 1558, Canyon Lake, Texas 78130-1558 (USA). INSTALL is Copyright (c) 1987-1992 by Knowledge Dynamics Corp. which reserves all copyright protection worldwide. INSTALL is provided to you for the exclusive purpose of installing ASTRO Radio Service Software. Motorola is exclusively responsible for the support of ASTRO Radio Service Software, including support during the installation phase. In no event will Knowledge Dynamics Corp. provide any technical support for ASTRO Radio Service Software.

## Trademarks

Ⓜ, Motorola, PAC-RT, and Private-Line are registered trademarks of Motorola, Inc.

ASTRO, Call Alert, Channel Scan, Conventional ASTRO, Digital Private-Line, FLASHport, HearClear, MDC-1200, Quik-Call, Quik-Call II, SABER, SABER SI, Secure Clear, SECURENET, Sel Cal, Single Tone, SMARTNET, SMARTNET ASTRO, SMARTNET DATA, SmartZone, Stat-Alert, and VRM-500 are trademarks of Motorola, Inc.

PC XT and Personal Computer AT are trademarks of IBM Corp.

MS-DOS and Windows are trademarks of Microsoft Corp.

## Foreword

This edition of the ASTRO™ Radio Service Software (RSS) user's guide contains revisions and updates made in support of all ASTRO RSS bearing the Software Part Number 6085A, particularly ASTRO RSS version R05.00.00. Although the new RSS contains other changes, this update is primarily driven by the introduction of ASTRO System Release 3.0 and Motorola's new ASTRO Digital Portable radio: the XTS 3000.

**Note:** Since the ASTRO SABER™ and ASTRO XTS 3000 classes of radio are internally and ergonomically different models, they are not cross-clonable. *In other words, the ASTRO Portable RSS CANNOT be used to clone a SABER archive into a XTS 3000 and vice-versa.*

Below is a summary of the primary ASTRO Radio Service Software (RSS) enhancements and ASTRO radio feature support introduced in this new release of Motorola ASTRO (Portable/Mobile) RSS. Note that some of these features and enhancements are available on a Portable versus Mobile radio basis while others are common to both ASTRO radio types. Please also note that, with the exception of any identified RSS software enhancements, many ASTRO RSS field and screen introductions typically allow the programming of radio options. This means that the visibility of these fields in the RSS will depend on the capability of the particular ASTRO being programmed. Please consult your radio manual and/or refer to the appropriate sections of this user's manual for a detailed description of the respective radio features.

### **ASTRO Portable RSS only:**

ASTRO XTS 3000 radio models support.

### **ASTRO Mobile RSS only:**

Support of Auxiliary Siren Switch as a Vehicle Interface Port (VIP) input.

Support of External Transmit Attenuator as a Vehicle Interface Port (VIP) output.

Improved Vehicular Repeater System–Expanded Protocol (VRS-EP).

Programmable Self-Test Alert Tone.

Support of Direct Status, Message and Mode on DEKs.

### **ASTRO Portable AND Mobile RSS:**

Fully programmable MDC System Ack Pretime.

Programmable Trunking Transmit Deviation level.

Digital Common Air Interface (CAI) Operation.

ASTRO Conventional Talkgroups.

# Important Note on ASTRO SABER vs. ASTRO XTS 3000

## ***About ASTRO XTS 3000***

ASTRO XTS 3000 is an addition to the family of Motorola ASTRO Digital Portable radios. Like its predecessor the ASTRO SABER radio, the ASTRO XTS 3000 can be programmed using the ASTRO Portable Radio Service Software. Only a handful of subtle RSS feature field and screen differences are visibly evident between the two types of radios. These variations are noted in the appropriate screen views captured in this manual. Most of these variations are simply a result of differences in radio display and other physical characteristics between ASTRO SABER and ASTRO XTS 3000.

**Note:** Please consult your ASTRO XTS 3000 radio User's Manual directly for detailed information on the features and capabilities of the new radio product.

## ***Programming ASTRO SABER Portables***

As far as general usage is concerned, the revised ASTRO Portable RSS is no different from the one used to program pre-existing ASTRO SABER Portable radios. You should be able to program ASTRO SABER radios using this RSS just as you did with previous RSS versions. If you have no previous experience in programming an ASTRO SABER Portable radio, this manual will serve as an introduction and detailed reference on the use of this RSS.

## ***Programming ASTRO XTS 3000 Portables***

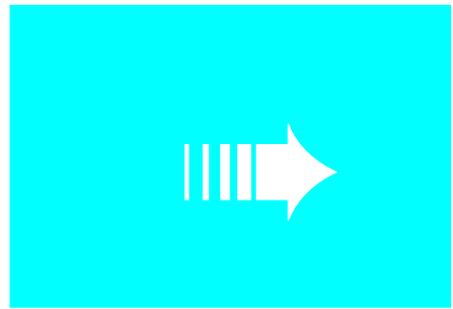
Unlike ASTRO SABER models which have an "H04" model number prefix, ASTRO XTS 3000 models bear the "H09" prefix. There are, however, no special operations to be performed in order to use the ASTRO Portable RSS software to program ASTRO XTS 3000 models. Proceed with reading, programming and writing to the codeplug as you usually do with ASTRO SABER models, consulting the appropriate sections of this manual as necessary.

**Note:** *First time ASTRO RSS users should note that like the ASTRO SABER model, the ASTRO XTS 3000 model is a portable radio which **MUST** be used with the Portable version of the ASTRO RSS.* Again, if you are not familiar with the ASTRO RSS at all, reading this manual in its entirety should help you better understand how to program an ASTRO radio.

## ***Cross-Model Cloning***

Although both ASTRO XTS 3000 and ASTRO SABER radio models can be configured using the same (ASTRO Portable) RSS, **they inherently belong to different radio model categories.** Consequently, *an ASTRO SABER radio or archive **CANNOT** be cloned into an ASTRO XTS 3000 radio and vice versa.* Such cloning scenarios are NOT supported by the RSS and will be unsuccessful if attempted.

# Table of Contents



1 - Getting Started . . . . .	7
Prerequisites . . . . .	8
Using This Manual . . . . .	9
Assembling The Hardware . . . . .	10
What's On The RSS Diskettes . . . . .	12
Installing The RSS . . . . .	12
The Banner Screen . . . . .	15
Anatomy of a Menu . . . . .	16
Navigating Through The RSS Menus . . . . .	17
Anatomy of a Screen . . . . .	18
Complete Menu Mapping at a Glance . . . . .	19
Changing A Field Value . . . . .	22
Configuring Computer Defaults from the RSS . . . . .	23
Retrieving RSS Version & Parts Information . . . . .	25
Exiting the RSS . . . . .	25
Main Menu . . . . .	26
Service Software Configuration . . . . .	28
Configure Paths and Port . . . . .	29
Setting Screen Colors . . . . .	32
2 - Basic Radio . . . . .	
Programming Tutorial . . . . .	35
Programming a Basic 16-Channel ASTRO Conventional Radio . . . . .	35
Desired Features . . . . .	35
Major Decisions Involved . . . . .	36
High-Level Programming Flow . . . . .	36
ASTRO Button/Switch/Menu Item Defaults . . . . .	37
Step-by-Step Programming Instructions . . . . .	41
Programming a Basic ASTRO Trunked Radio . . . . .	45
Desired Features . . . . .	45
Major Decisions Involved . . . . .	45
High-Level Programming Flow . . . . .	45
Step-by-Step Programming Instructions . . . . .	46
ASTRO SABER I Radio Button/Switch/Menu Item Defaults . . . . .	46
ASTRO XTS 3000 I Radio Button/Switch/Menu Item Defaults . . . . .	46
ASTRO SABER II Radio Button/Switch/Menu Item Defaults . . . . .	47
ASTRO SABER III Radio Button/Switch/Menu Item Defaults . . . . .	49
ASTRO XTS 3000 III Radio Button/Switch/Menu Item Defaults . . . . .	49
ASTRO Mobile Radio Conventional/Trunking Button Locations . . . . .	50
Cloning Radios . . . . .	57
Exit the RSS . . . . .	58
3 - Service Menu Functions . . . . .	59
Servicing the Radio Using the RSS . . . . .	59
Menu Map . . . . .	59
Service Menu . . . . .	60
Controller Board Initialization . . . . .	62
Transmitter Alignment Menu . . . . .	64

Reference Oscillator Alignment . . . . .	66
Transmit Power Alignment . . . . .	67
Transmit Deviation Balance (Compensation) Alignment . . . . .	69
Transmit Deviation Limit (Portables Only) . . . . .	71
Transmit Current Limit Alignment (Mobiles Only) . . . . .	72
Receive Alignment Menu (Portables Only) . . . . .	74
Front-End Filter Alignment (Portables Only) . . . . .	75
Receiver VCO Alignment (Portables Only) . . . . .	76
4 - Get/Save/Program Menu Functions . . . . .	77
Menu Map . . . . .	77
Get/Save/Program Menu . . . . .	78
Reading Codeplug Data From Radio (Requires RIB) . . . . .	80
Get Codeplug Data From Archive File . . . . .	81
Clone Radio . . . . .	82
MDC Data Cloning . . . . .	85
ASTRO ID . . . . .	87
MODAT . . . . .	88
Saving Codeplug Data to an Archive File . . . . .	89
Programming the Radio Codeplug (Requires RIB) . . . . .	91
Programming History . . . . .	92
5 - Change/View Menu Functions . . . . .	95
Menu Map . . . . .	95
Change/View Menu . . . . .	97
Radio Wide Configuration Menu . . . . .	99
Radio Wide Options . . . . .	101
Radio Wide Secure Options . . . . .	106
Hardware Encryption Multikey Options . . . . .	109
Software Encryption Multikey Options . . . . .	111
Software Key Entry Menu . . . . .	112
More Multikey Parameters . . . . .	113
OTAR Options . . . . .	115
Radio Wide Emergency Options . . . . .	118
More Radio Wide Options . . . . .	120
Radio Wide Features Configuration Menu . . . . .	123
Radio Wide Button Configuration (Mobiles Only) . . . . .	125
Radio Wide Button Configuration (Portables Only) . . . . .	128
Hand-Held Control Button Configuration (ASTRO SABER Portables Only) . . . . .	132
Radio Wide Switch Configuration (Portables Only) . . . . .	136
Radio Wide Switch Configuration (Mobiles Only) . . . . .	140
Radio Wide Menu Item Configuration . . . . .	141
DEK Button Configuration (Mobiles Only) . . . . .	146
VIP In (Mobiles Only) . . . . .	149
VIP Out (Mobiles Only) . . . . .	150
Phone Configuration . . . . .	151
DTMF Access/ Deaccess Codes . . . . .	153
Dialing Options . . . . .	155
Radio Wide Scan Lists and Options . . . . .	157
Radio Wide Scan Options . . . . .	161
Radio Wide Display Options . . . . .	163
PTT-ID Display Options . . . . .	167
Alarm Options (Mobiles Only) . . . . .	168
More Radio Wide Options (Mobiles Only) . . . . .	171
Siren and PA Options (Mobiles Only) . . . . .	172
VRS Options (Mobiles Only) . . . . .	174

VRS-EP Mode Steering (Mobiles Only) . . . . .	181
Trunking Menu . . . . .	185
Trunking Radio Wide Options . . . . .	186
SmartZone Environment . . . . .	189
Voice-On-Control (VOC) Options . . . . .	192
Trunking Systems . . . . .	194
Control Channel (800 MHz) . . . . .	198
Channel Assignment Data -(for Other Band Trunking -UHF/VHF) . . . . .	199
Control Channel (for Other Band Trunking - UHF/VHF) . . . . .	201
Multikey Options . . . . .	203
ASTRO Options . . . . .	204
Trunking System Options . . . . .	206
Trunking One-Touch Button Options . . . . .	209
Trunking Status Alias . . . . .	211
Trunking Message Alias . . . . .	212
Trunking Site Alias . . . . .	213
Trunking Personality . . . . .	214
WAC AMSS Failsoft . . . . .	221
Trunking Subfleets . . . . .	222
Trunking Talkgroups . . . . .	224
Trunking Emergency Data Configuration . . . . .	226
Trunking Personality Options . . . . .	231
SmartZone Preferred Sites . . . . .	233
Trunking Call List Table . . . . .	235
Conventional Menu . . . . .	237
Conventional Radio Wide Options . . . . .	239
Conventional Personality . . . . .	241
Conventional Secure Personality . . . . .	246
Personality MDC Options . . . . .	250
Conventional Personality Phone Options . . . . .	252
More Conventional Personality Options . . . . .	253
ASTRO Conventional Personality Options . . . . .	257
ASTRO Conventional Talkgroup Options . . . . .	263
OTACR/OTACS (For ASTRO Portables Only) . . . . .	265
Conventional Personality RAC Options . . . . .	267
MDC Configuration Menu . . . . .	269
MDC Systems . . . . .	270
MDC System Options . . . . .	274
MDC System Remote Options . . . . .	277
MDC Call List Table . . . . .	279
MDC Repeater ID . . . . .	281
ASTRO Menu . . . . .	282
ASTRO Radio Wide Options . . . . .	283
ASTRO Systems . . . . .	287
Soft ID . . . . .	290
ASTRO System Options . . . . .	291
ASTRO System Remote Options . . . . .	295
ASTRO Call List . . . . .	297
ASTRO Data Peripheral (Mobiles Only) . . . . .	299
ASTRO Conventional Talkgroups . . . . .	300
MODAT . . . . .	303
Auxiliary Systems . . . . .	304
Singletone Systems . . . . .	305
Singletone List . . . . .	307
Conventional Message Alias List . . . . .	308
Conventional Status Alias List . . . . .	309
Zone/Talkgroup Assignment . . . . .	310

6 - Print Menu Functions. . . . .	313
Menu Map . . . . .	313
Print Menu . . . . .	314
Radio Wide Configuration Print Menu . . . . .	315
Radio Wide Features Configuration Print Menu . . . . .	316
Trunking Print Menu . . . . .	317
Conventional Print Menu . . . . .	318
MDC CONFIGURATION PRINT MENU . . . . .	320
ASTRO Print Menu . . . . .	321
Auxiliary Systems Print Menu . . . . .	322
7 - File Maintenance Menu Functions . . . . .	323
Menu Map . . . . .	323
File Maintenance Menu . . . . .	324
Create Directory Path . . . . .	325
Delete Archive File . . . . .	326
8 - FLASHport™ Upgrade. . . . .	327
Menu Map . . . . .	327
FLASHport Upgrade . . . . .	328
Appendix A - Computer-to-Radio Communication Error Codes. . . . .	329
Appendix B - TPL Frequencies and Codes . . . . .	331
Appendix C - DPL Codes . . . . .	333
AppendixD - ASTRO Features . . . . .	335
AppendixE - Trunked Radio Personality Chart . . . . .	343
AppendixF - Conventional Radio Personality Chart . . . . .	345
Glossary. . . . .	347
Index . . . . .	361

# Getting Started

# 1

Welcome to the ASTRO Radio Service Software application!

This Radio Service Software (RSS) manual is your guide to customizing and programming a variety of features into an ASTRO radio. Modern microprocessor chip technology used to manufacture this radio and the ASTRO RSS (a computer program, which when interfaced with a radio, electronically programs a radio) make it possible for you to personalize a radio with a unique set of features for each individual customer. No tools are needed.

The RSS computer program resides on the diskettes you received in the package with this manual. The radio's customization and servicing is accomplished using an IBM<sup>®</sup> compatible computer with an 80386 or newer processor.

**Note: The alignment and troubleshooting sections of this manual are intended for use by qualified communication technicians and maintenance personnel only.**

Listed below are some of major features and functions of the ASTRO RSS:

ASTRO RSS Programmable Features	ASTRO RSS Service Functions
Transmit (Tx) frequencies	Reference Oscillator alignment
Receive (Rx) frequencies	Transmit Deviation alignment
PL/DPL codes	Transmit Power alignment
Signalling System parameters	Replaced Power Amplifier calibration
Scan Lists and Scan options	Replaced Logic Board calibration
Radio Button and Soft Key features	Replaced RF board calibration
Phone Lists and options	Controller Board Initialization
Call Lists and options	Bit Error Rate Testing
Channel (customized) names	Test Pattern Transmission
Volume and Tone levels	
Channel attributes (personalities)	
Power Level	
Special Software option parameters	
Radio Software Upgrades via FLASHport	

---

## Prerequisites

To program radios using the RSS, we recommend a basic working knowledge of the following:

- Microcomputers
- The radio's available features (Refer to the appropriate Radio Operator's Manual.)
- Your customers' needs
- MS-DOS operating system, version 5.0 or later

The ASTRO RSS requires a minimum of 510 kilobytes of free RAM to run. (The DOS CHKDSK command can be used to determine the amount of free RAM available on your computer.) DOS 5.0 is required. It is also strongly recommended that this RSS be run on an IBM® compatible computer with an 80386 or newer processor with the following minimum configuration:

- 80386 CPU or higher
- DOS 5.0 or higher (with DOS running in high memory)
- 4 Megabytes of RAM or greater

The installation program will determine if your system has an adequate amount of memory available (4M) and a 386 (or 486) CPU for extended memory operation. If these are present, the RSS will be installed.

The powerful features and extensive flexibility of new radio families require much more codeplug data validation than in the past. For complex configurations, it is recommended that the RSS be executed from a RAM disk. This will reduce execution time significantly. To configure your computer with a RAM disk, you need to modify your CONFIG.SYS file with a statement. The sample statement below is required to run the RSS in DOS 5.0:

**DEVICE=C:\DOS\RAMDRIVE.SYS 4096 512 1024 /E**

The following lines should also be added to the CONFIG.SYS file if necessary:

```
device = c:\dos\HIMEM.SYS  
device = c:\dos\EMM386.EXE OFF  
Files = 30
```

**Note:** The DOS MEM command can be used to determine the amount of available memory in your computer (i.e. type c:\dos\mem. *The location of MEM.EXE may differ on your machine.*) If the command reports 3000K or more of available extended memory, you can run the ASTRO RSS.

---

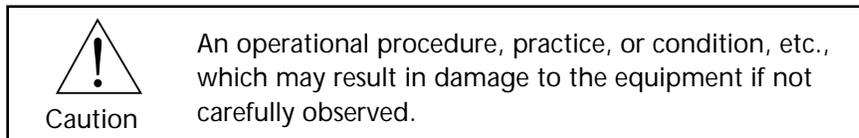
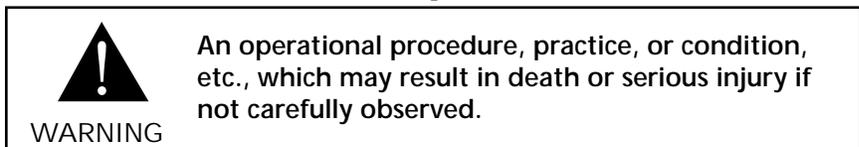
## Using This Manual

The ASTRO RSS Manual is designed to teach basic radio feature programming and to speed up access to technical reference information. It is intended for both beginners and advanced users of the RSS. This manual contains information on all of the following:

- How to connect the radio and other required hardware to your computer
- How to install the RSS
- How the RSS operates and how the screens are organized
- How to navigate through the menus and screens from the MAIN MENU and use special keyboard commands
- What the purpose of each menu and screen is, along with detailed descriptions of the functions and data fields relevant to each menu/screen
- How to program a radio using the GET/SAVE and CHANGE/VIEW screens as well as how to service the radio using the SERVICE screens
- How to organize your file directories and specify directory paths for codeplug files
- How to print out radio programming information
- How to clone (or program identical information into several) radios

To locate the information you need, use the Table of Contents and/or the Index. For explanations of major terms used in this manual, refer to the Glossary.

Watch for WARNINGS, CAUTIONS and NOTES which are used throughout this manual, the definitions of which are provided below:



**Note:** An operational procedure, practice, or condition, etc., which is important to emphasize.

**What italicized text means:** Special notes about field and model dependencies are italicized throughout this manual so that they are easy to locate. An example is reproduced below:

*A codeplug must be loaded into your computer's memory (using GET/SAVE/PROGRAM MENU functions) before you will be allowed to access the CHANGE/VIEW MENU (F4) and related screens.*

## Assembling The Hardware

The figure below shows how to assemble the required (and optional) equipment used to program an ASTRO radio.

### RIB Power Supply

**01-80357A57 or later** (110 Vac)  
Power Supply

or **01-80358A56 or later** (220 Vac)  
Power Supply

Using the power supply is more reliable than using a weak battery.

### or Smart RIB Power Supply

**01-80302E27 or later** (120 Vac)  
Power Supply (Required for  
*FLASHport* operation only.)

### Portable Products Test Set - P/N

**RTX4005B or later**  
or  
**RTX4005A (with Rework Kit  
RPX4665A) or later**

Provides capability for testing many transmitter and receiver functions. Transmitter modulation and keying can be simulated and receiver parameters can be tested without opening the radio. The Test Set is used in conjunction with the programming/test cable.

### RIB-to-Radio Cable

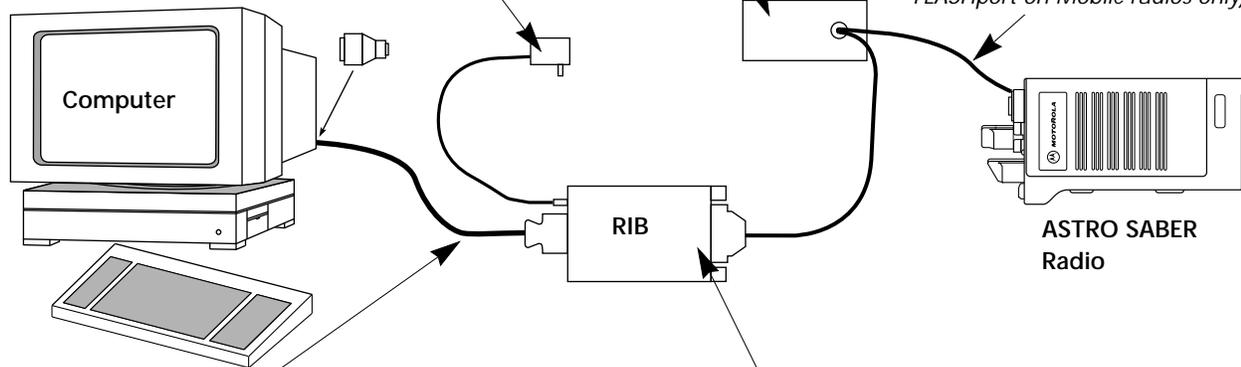
**RDN4046A or later** (*ASTRO SABER  
Portable*)

or  
**RKN4035A or later** (*ASTRO XTS  
3000 Portable*)

or  
**30-80369B73 or later** (*Mobile Low  
Power*)

or **0180300B10** (*Mobile High  
Power*)

or  
Smart RIB-to-Radio Cable  
**RKN4047A** Cable (required for  
*FLASHport* on Mobile radios only).



### Radio Interface Box (RIB)-to-Computer Cable

**30-80369B72 or later** Cable for IBM  
Personal Computer AT or compatible  
computer  
(9-pin end and a 15-pin end).

or **30-80369B71 or later** Cable for IBM  
Personal Computer XT or compatible  
computer  
(25-pin end and a 15-pin end)

or Smart Radio Interface Box (SRIB) to  
Computer Cable **30-80390B48 or later**  
cable (Required for *FLASHport* operation only)

### Radio Interface Box (RIB)

**RLN4008B RIB or later**  
or Smart Radio Interface Box (RIB)  
**RLN1015B or later RIB** (Required for  
*FLASHport* operation only.)

For laptop computer and on-the-road use  
only, omit the power supply and use a 9V  
battery (*not included*).



Caution

Use a fresh, 9V battery. LED remains lit  
with a weak battery. This may cause  
certain errors on screen.

## Steps to Connect the Hardware

1. Connect the RIB-to-computer cable to the communications port of the computer (9-pin end).
2. Connect the other end (15-pin end) into the RIB Box. (If your computer has a 25-pin connections port connector, you will need the cable 30-80369B71 to connect the RIB-to-computer cable to the computer.)
3. Connect the 25-pin end of the RIB-to-radio cable to the RIB box, and the 9-pin end to the side connector of the radio.
4. Plug one end of the power supply into the RIB and the other end into a wall outlet.

**Note:** Connections of SRIB hardware will vary slightly from the RIB-connection procedure with respect to pin connectors and cables.

After you connect the hardware, turn on the radio. You will hear one of the following types of tones:

High-pitched, short tone	Hardware is connected correctly and the radio's internal firmware is operating correctly. This tone may be disabled in the codeplug and may not be heard.
Continuous low tone	Critical failure or radio's internal software malfunction.

Even without the necessary hardware, you will be able to start or explore the RSS (after installation) using just the diskettes and your computer simply by loading an existing radio archive stored on disk. What you cannot do without the required hardware is read from or save codeplug data to an actual radio and perform service functions.

 Caution	<p>When programming or calibrating a radio, DO NOT disconnect the radio from the RIB when the computer is communicating with the radio. If you do so, the radio may become inoperable. The only recommended time to disconnect the radio is while you are at the MAIN MENU or at the GET/SAVE/PROGRAM menu.</p>
--	---

**Note:** If you are using a laptop computer and you plan to use the RSS while the computer is in battery mode, you may need to set the serial/parallel adapter to run on battery power. This can be accomplished using the application diskette supplied by the computer manufacturer. If this action is not performed, you are likely to receive serial bus errors.

**Note:** If your RIB has a switch and LED, be sure to turn on the switch before each programming session.

---

## What's On The RSS Diskettes

Below are the names and descriptions of files located on the diskettes you received with this manual.

File Name	File Type	Description
Disk #1		
INSTALL.EXE	Installation file	Installation program.
RSS.001	Compressed file	Compressed version of the file that the installation program uncompresses when it installs the RSS on your hard disk.
README.TXT	Text file	RSS release information that could not be included in the manual. Open this document using your DOS/other editor <i>preferably before</i> you install the new RSS.
Disk #2		
RSS.002	Compressed file	Compressed version of the file that the installation program uncompresses when it installs the RSS on your hard disk.
The following files can be found on both diskettes:		
INSTALL.DAT	Installation file	Installation data.
DISK.ID	Installation file	Identification information used by the installation program.

---

## Installing The RSS

Create a Back-up Copy of RSS Diskette(s)

We recommend that you make a back-up copy of the RSS. To make a back-up copy, follow the steps below for each diskette.

1. Insert the RSS diskette you received with this manual into drive A.
2. Type **DISKCOPY A: A:**

 Caution	Accidentally reversing the insertion order of the diskettes will erase the contents of the RSS diskette. DOS will tell you when to insert the source diskette (the original RSS diskette) and when to insert the target diskette (a newly formatted one). When the disk copy command has been executed, use the target diskette as the new working copy.
--	--

3. Use the backup copy and keep the original RSS diskettes in a safe place away from magnets, moisture and heat.

What To Do with Previous Versions of RSS Diskettes

We recommend that you discard previous versions of the RSS so that you always have the most current version available and do not mistakenly program a radio with outdated data. In addition, the latest RSS version has updated codeplug structures which will be unreadable with old versions of the RSS.

Installing the RSS on your Hard Disk

Install the latest RSS version as soon as you receive it. This ensures that you have the latest version of the RSS installed at all times. This action also stores important files in a consistent place for cross-referencing and future use. The software installation will take approximately three minutes.

The INSTALL program will:

- Create the MRSS directory and the ASTRO, *ARCHIVEM* and/or *ARCHIVEP*, OFF, SRIB, SYSKEY, and UPGRADE sub-directories if they do not already exist. (For mobiles, the archive directory will be named ARCHIVEM, and for portables, it will be named ARCHIVEP.)
- Write over the old version's program files with the same name, if the names are the same.

**Note:** The installation program will NOT write over your archive files.

You may install the RSS on several personal computers and laptop computers at a single site depending on the terms of your license. If you have additional sites (i.e. a second shop, etc.) you should purchase additional subscriptions.

**Note: The RSS is NOT a Windows or OS/2 program. Windows or OS/2 cannot be loaded when you install or run the RSS. If you do, the RSS will not operate correctly.**

RSS Hard Disk Installation

1. Insert the RSS diskette marked Disk 1 in drive A.
2. Type **A:** (press Return).
3. At the **A:** prompt, type **INSTALL**.

Follow directions and answer questions on the display as and when they appear. You will be instructed to switch diskettes in the diskette drive (ex. "INSERT DISK CONTAINING FILE...").

When installation is complete, you may notice a number of new files on your hard disk depending on the particular RSS (Portable, Mobile or Both) you installed. These files are listed on the following page. With the exception of README.TXT files, do not delete or move these files from their locations.

File Name	Location	Description
RUNTIME.EXE	\mrss\astro	RSS application executable program.
SMARTRIB.ENC	\mrss\astro\srib	Used by the RSS to configure your SmartRIB.
ASTROM.ODB	\mrss\astro	Used by the RSS to configure ASTRO Mobile radios.
ASTROP.ODB	\mrss\astro	Used by the RSS to configure ASTRO Portable radios.
ASTROM.BAT	\	A batch file that launches the ASTRO Mobile RSS application.
ASTROM.BAT	\mrss\astro	A batch file that launches the ASTRO Mobile RSS application.
ASTROP.BAT	\	A batch file that launches the ASTRO Portable RSS application.
ASTROP.BAT	\mrss\astro	A batch file that launches the ASTRO Portable RSS application.
ASTMHOPT.MDF	\mrss\astro	Used by the RSS to configure ASTRO Mobile radios.
ASTPHOPT.MDF	\mrss\astro	Used by the RSS to configure ASTRO Portable radios.
ASTROMBC.ENC	\mrss\astro\upgrade	Used by the RSS to configure ASTRO Mobile radios.
ASTROPBC.ENC	\mrss\astro\upgrade	Used by the RSS to configure ASTRO Portable radios.

## RSS Start-Up Procedure

Once installation is complete, follow the start-up procedure below:

1. Type **C:** and press Return to log on to the hard drive.
2. At the **C:\** prompt type **ASTROP** or **ASTROM** (*depending on which RSS you installed or which you would like to run*).

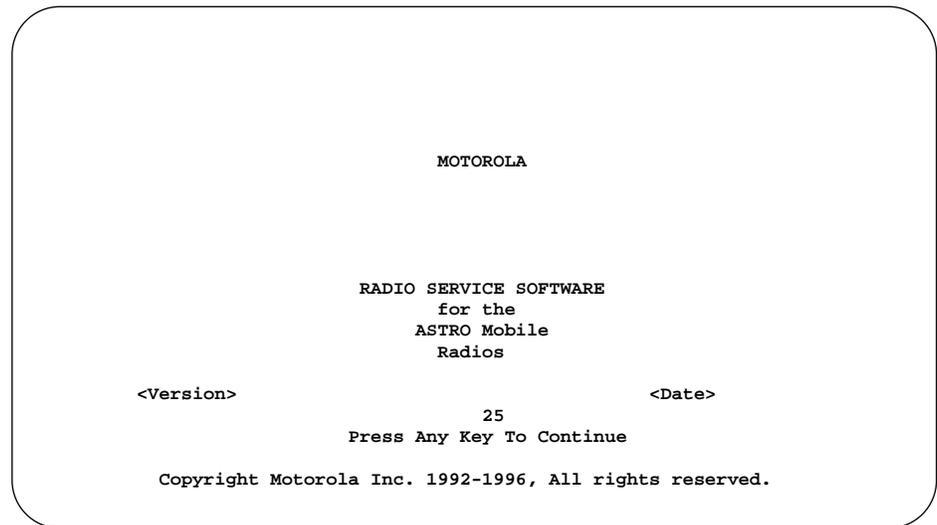
This command starts up the RSS. If the software does not start up correctly, you may hear a tone or see an error message or error code on the display.

**Note: If you did not read the accompanying README.TXT file prior to performing the installation, you may want to do so now. Special release information contained in this file may be of great value to you.**

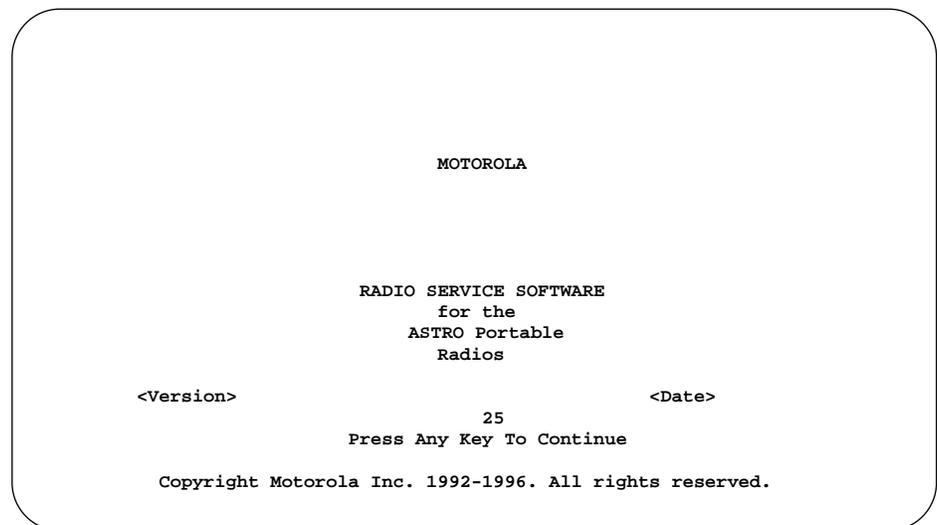
---

## The Banner Screen

When the program has been successfully loaded in your computer, you will see a BANNER screen like the one below with the Motorola logo and RSS copyright information.



*Banner Screen for Mobile Version of RSS*



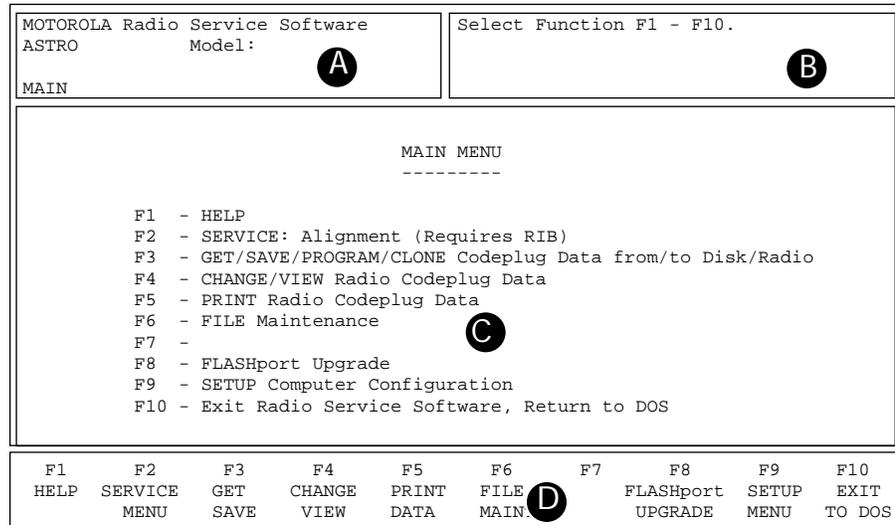
*Banner Screen for Portable Version of RSS*

**Note:** The *Version* and *Date* are not shown on the BANNER screen above. However, your RSS will show the actual version and date on the BANNER screen.

Press any key to access the MAIN MENU.

## Anatomy of a Menu

The RSS consists of several multi-level menus that will take you to screens where you can change the choice or value of a field. The only difference between a menu and a screen is nature of the information that appears in the *working area* (marked by the letter C in the figure below). A menu or screen has four areas, labelled below as A, B, C and D.



**A** RSS Location ID Area

In this area you will find the words “MOTOROLA Radio Service Software”, “ASTRO MOBILE” or “ASTRO PORTABLE”, and a menu or screen path name for the current menu or screen. Each menu and screen name will be separated by a colon (:). If a radio codeplug has been read, its model number will also be displayed in this area.

**B** Instruction Area

As the name indicates, this area directs you to perform specific actions such as “Select Function, F1-F10”, “Use UP/DOWN arrows to scroll value,” and so on. The first two lines contain suggestions for the appropriate action, and the last two lines are status lines.

**C** Working Area

This area of a menu (not a screen) displays a list of functions (menu choices) you can execute from the current menu. Each menu item is preceded by an F-key (function key). Pressing an F-key from among the available choices will bring up another menu or screen as the case may be.

**D** F-Key (Function-Key) ID Area

This area displays the F-keys and function names for the current menu or screen. Each menu item is preceded by an F-number key (function key). Pressing an F-number key advances you to another menu, screen, or performs the indicated operation.

**Note:** All functions (supported and unsupported) will be displayed in the menu’s working area. The unsupported functions (based on the radio’s model or options) will; however, NOT be displayed in the F-key area.

---

## Navigating Through The RSS Menus

Every action of the RSS is controlled by you through the use of formatted displays and function keys.

Under each menu or screen title, you will find a sequence of F-keys (or Function keys) such as **D C E** . This sequence represents the path from the MAIN MENU to that specific menu or screen. To access the desired menu or screen, simply press these keys one by one from the MAIN MENU.

The F-keys and other special keys that you can use to communicate with the RSS are listed below along with their various functions.

F1	Used to display on-line help information on <i>every</i> RSS screen and menu. On-line help provides information on how to use the currently displayed menu, screen, line or field. You may also find system setup information in a HELP screen. In many cases, the help information provided is for the specific line of the screen that is currently highlighted.
F2 through F9	The <b>F2</b> through <b>F9</b> keys perform special functions and actions which can vary from menu to menu and from screen to screen. For instance, <i>on some screens</i> , <b>F5</b> will print out the current screen to your printer, <b>F8</b> will save the data and options currently displayed, and so on.
F10	Used to exit to previous menu or screen. The <b>F10</b> key performs this function on <i>every</i> menu and screen. At the MAIN MENU, the <b>F10</b> key is used to exit the RSS.
Esc	Used to exit to the MAIN MENU. The <b>Esc</b> key performs this function on <i>every</i> menu and screen.
Tab	Accepts data currently in the field and then moves the prompt forward one field. If the entry is not accepted, an error beep will sound. The value you entered is probably not a valid value. Functions like the <b>Enter</b> or <b>Return</b> key.
Left/Right Arrows	Used to move in the direction of the arrow. The <b>Num Lock</b> key must be off.
UP/DOWN Arrows	Used to scroll through selections, or to increase/decrease the value in the highlighted field. <b>Num Lock</b> key must be off.
Del	Used to erase the current character in a field.
PgUp	Used to display the previous page of information on the screen.
PgDn	Used to display the next page of information on the screen. The <b>Num Lock</b> key must be off.

# Anatomy of a Screen

The only difference between a menu and a screen lies in the contents of the working area.

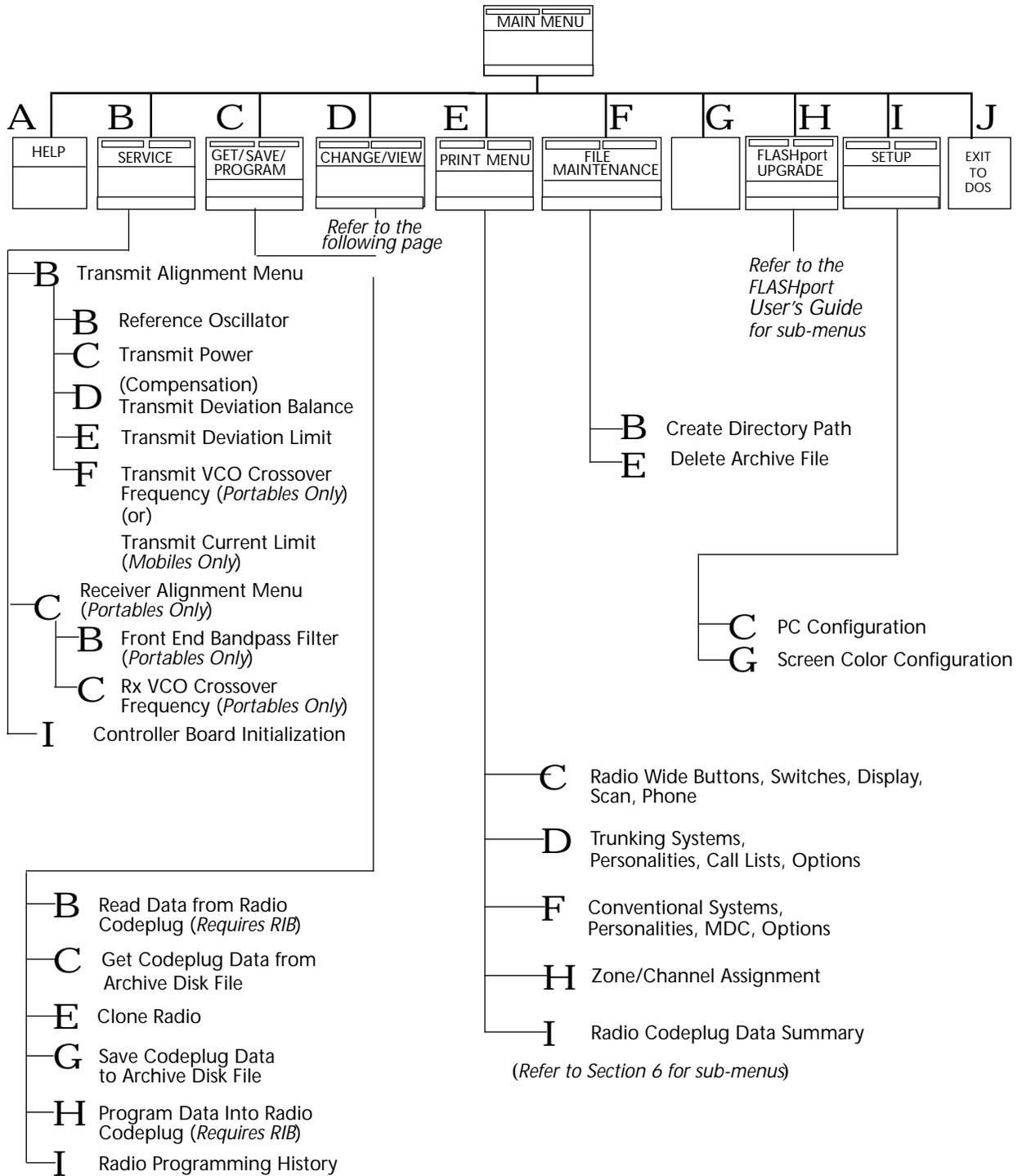
MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Frequency.							
MAIN:CHANGE/VIEW:CONV:PERS									
Personality.....1      CONVENTIONAL PERSONALITY ----- Receive Only.....Disabled      Signalling.....MDC Direct / Talkaround.....Enabled      MDC System #.....1 Time Out Timer.....3- 60      PTT ID.....Disabled Scan List.....1      Revert.....Selected Channel Hot Keypad.....Disabled      Rx Voice/Signal Type.....Non-ASTRO Phone Operation.....Unlimited      Tx Voice/Signal Type.....Non-ASTRO									
	Receive	Transmit	Direct						
Frequency (MHz)	851.01250	806.05000	851.01250						
Squelch Type	PL	PL	PL						
Code	67.0 Hz XZ	67.0 Hz XZ	67.0 Hz XZ						
DPL Invert									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	SECURE	MDC	PHONE	MORE	EXIT
	PERS	PERS	PERS	PERS	OPTIONS	OPTIONS	OPTIONS	OPTIONS	

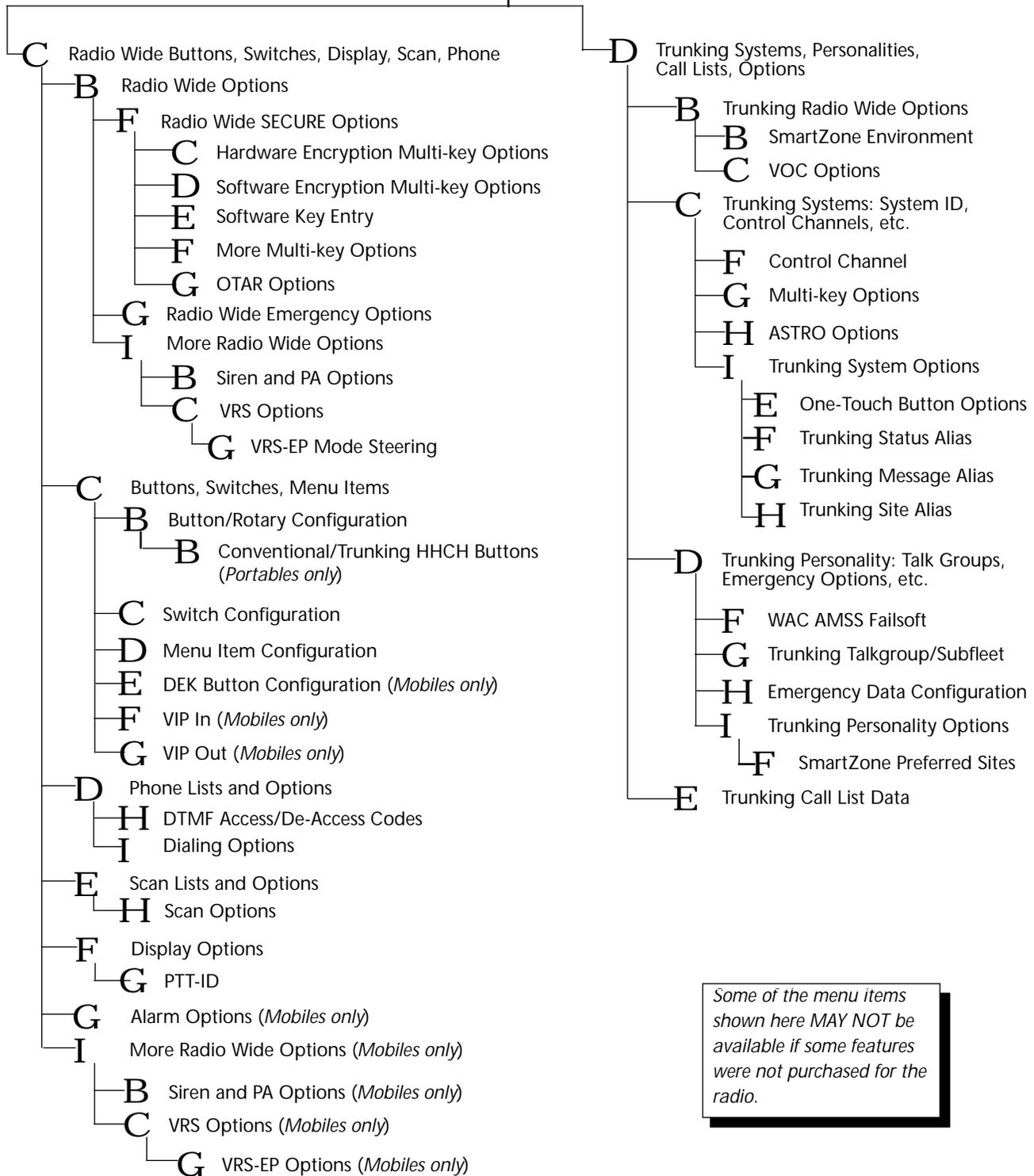
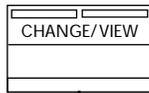
The working area of a screen contains a list of programmable features called “fields” that can be selected or changed using the arrow, tab or return keys described earlier. On some screens, there are features that can be selected for each *individual* channel or mode; these features are selected on a mode-by-mode basis.

On other screens, there are features that can be selected for *all* modes of the radio (referred to as “radio-wide” features). And still other screens list those features that perform specific RSS functions, such as servicing the radio or printing the personality data.

# Complete Menu Mapping at a Glance

The menu map below is a guide through the entire RSS.



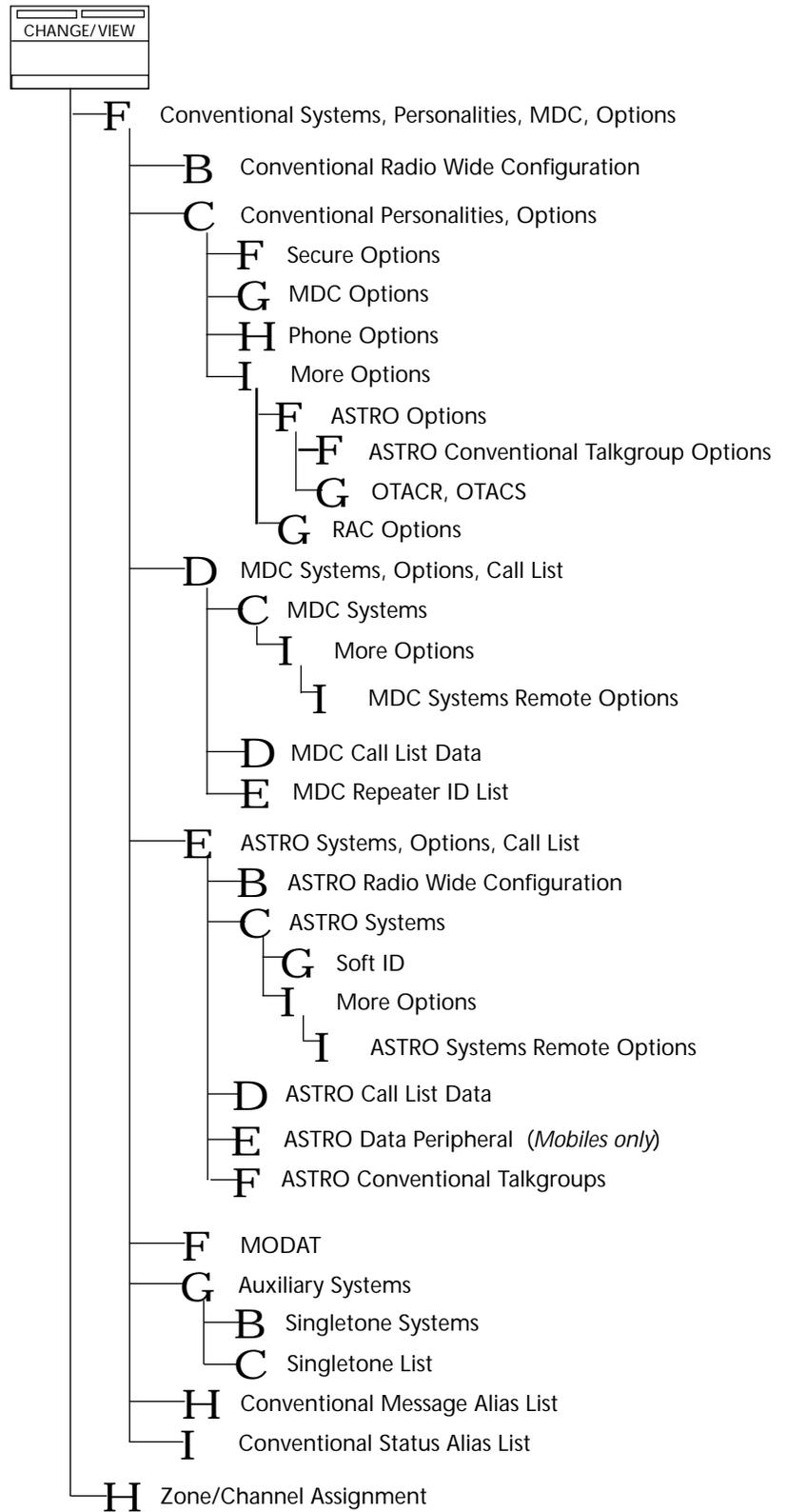


Some of the menu items shown here MAY NOT be available if some features were not purchased for the radio.

Continued on the following page

**CHANGE/VIEW MENU (Continued)**

Some of the menu items shown here MAY NOT be available if some features were not purchased for the radio.



## Changing A Field Value

Some screens contain fields that require, or take values from, other screens and features and thus are dependent upon each other. For example, the System ID number specified in the CHANGE/VIEW:TRUNKING:PERS screen are assigned in the CHANGE/VIEW:TRUNKING:SYSTEM screen.

Press Tab or Enter to move to field, and then type E for Enabled or D for Disabled.

MOTOROLA Radio Service Software ASTRO Model:					Enter or Scroll to Select Frequency.				
MAIN:CHANGE/VIEW:CONV:PERS									
Personality.....1					CONVENTIONAL PERSONALITY				
Receive Only.....Disabled					Signalling.....MDC				
Direct / Talkaround...Enabled					MDC System #.....1				
Time Out Timer.....3-60					PTT ID.....Disabled				
Scan List.....1					Revert.....Selected Channel				
Hot Keypad.....Disabled					Rx Voice/Signal Type....Non-ASTRO				
Phone Operation.....Unlimited					Tx Voice/Signal Type....Non-ASTRO				
Receive					Transmit		Direct		
Frequency (MHz) 851.01250					806.05000		851.01250		
Squelch Type PL					PL		PL		
Code 67.0 Hz XZ					67.0 Hz XZ		67.0 Hz XZ		
DPL Invert									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	SECURE	MDC	PHONE	MORE	EXIT
	PERS	PERS	PERS	PERS	OPTIONS	OPTIONS	OPTIONS	OPTIONS	

Press ↑ or ↓ to change value, or type new value.

Screen fields come in three basic types:

Information fields

Non-editable fields which cannot be altered or changed.

Scrollable fields

Contain a range of values, or several options, from which you can select the desired value/option. To edit or change a choice, press the arrow key(s).

Direct-entry fields

The desired value must be typed in using the keyboard. To edit or change a choice, type in an acceptable value.

Changing a field's value is typically done either by scrolling through a list of options (in scrollable fields) or by typing in a correct value (in direct-entry fields). Scrolling is accomplished using the arrow keys.

# Configuring Computer Defaults from the RSS

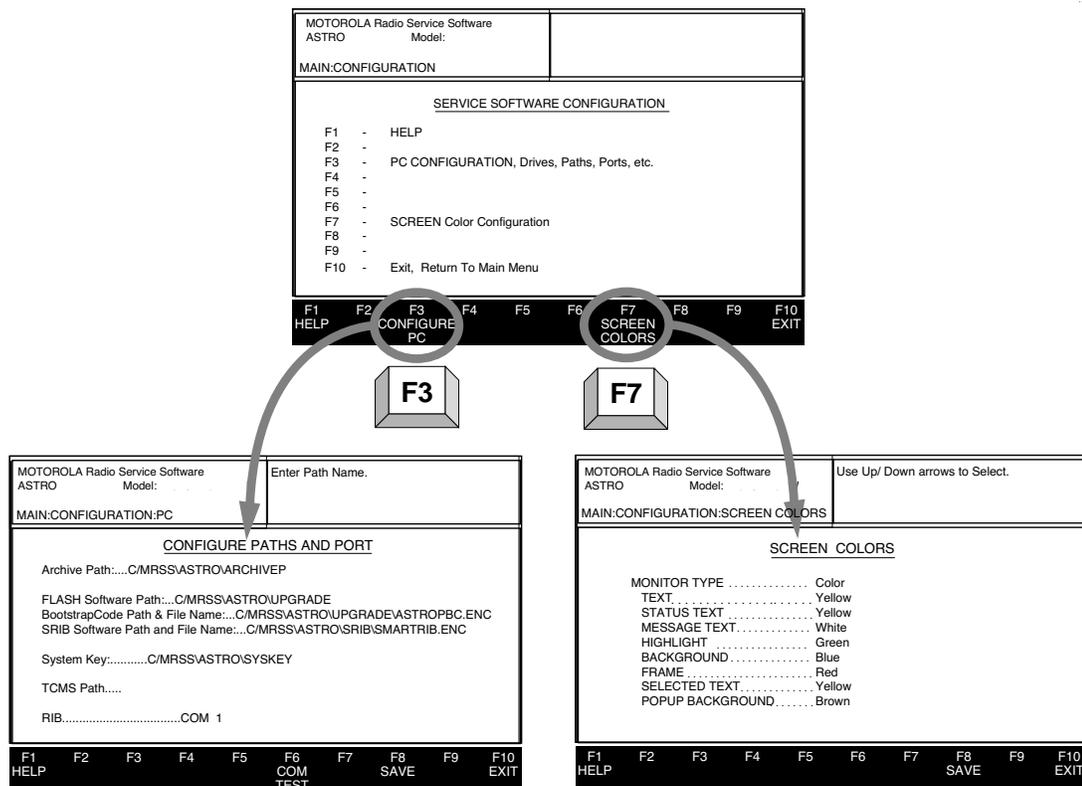
Setting computer defaults eliminates the need to specify them every time you enter the RSS or program a radio.

Read this section if you wish to do any of the following:

- Set a default file path name
- Set or change the default port used to interface with the radio and RIB
- Set the default colors you see on your RSS screen

To begin configuring RSS defaults, follow these steps:

1. Return to the MAIN MENU by pressing the **Esc** button.
2. From the MAIN MENU, press **F9** to get to the SERVICE SOFTWARE CONFIGURATION MENU.
3. From the SERVICE SOFTWARE CONFIGURATION MENU, you can read the on-line help (**F1**), set some default computer values, or exit (**F10**).
4. Press **F3** on the SERVICE SOFTWARE CONFIGURATION MENU to bring up the CONFIGURE PATHS AND PORT screen. Here, you can specify the default drive and path names for future archive files.
5. Press **F7** on the SERVICE SOFTWARE CONFIGURATION MENU to display the SCREEN COLORS. You can specify the colors for your screen's text, lines, background, and highlighted fields.



## Setting Default Archive and Back-up Paths

You can set the drive name and path names for archive files you will create later. Specifying a default path name early on will save much typing time later every time you want to save an archive file. Here's how to set the default archive and back-up file paths:

1. Press **F3** at the SERVICE SOFTWARE COMPUTER CONFIGURATION MENU to get to the CONFIGURE PATHS AND PORT screen.
2. At the CONFIGURE PATHS AND PORT screen, type **C:\MRSS\ASTROP\ARCHIVEP** (i.e., the archive file path name).

**Note:** This example assumes that you are storing your archive files on the hard disk.

**Note:** *The Archive Path in this example is for ASTRO Portables.* For ASTRO Mobiles, type **C:\MRSS\ASTRO\ARCHIVEM**.

3. Type **F8** to save the field options displayed on the screen.

## Setting a Default Communications Port

Use the following steps to specify the serial port to interface with the radio and RIB. The default port is COM 1.

1. Press **F3** at the SERVICE SOFTWARE CONFIGURATION MENU to bring up the CONFIGURE PATHS AND PORT screen.
2. Go to the serial port RIB field by pressing **Tab** as many times as necessary.
3. Select a port using the arrow keys to scroll through the available field options. Options are COM 1, COM 2. On some computers, COM 3, or COM 4 may also be available. Choose the port to which you have connected the computer-to-RIB cable.
4. Test the port by pressing **F6**, COM TEST. If the connection is okay, you will hear a beep, and the words "Communications With The Radio Was Successful" will appear in the instruction area.
5. Press **F8** to save this configuration. The message "Configuration File Written Successfully" will appear in instruction area of the screen.
6. Press **F10** to exit this screen or **Esc** to access the MAIN MENU.

---

## Retrieving RSS Version & Parts Information

The RSS has a help screen that contains information on the RSS and a list of relevant RSS programming accessory part numbers.

To display this information, simply press **F1** and then **F9** from any menu or (non-help) screen. If you are already in a Help screen, press **F9**. A sample screen is provided below.

```
MOTOROLA Radio Service Software
ASTRO Model:
Page 1 of 3
...CONFIG:FEATURES:SWITCHES:HELP

MOTOROLA Radio Service Software Information
-----
8961
RSS Version D04.03.00 06/07/96

Motorola Part Number Equipment
-----
RLN-4008B Radio Interface Box (RIB)
60-82728J01 or Power supply (9V) for RIB
01-80357A57 or Power supply (110V) for RIB
01-80358A56 Power supply (220V) for RIB
30-80369B71 or RIB to Computer Cable (25-pin connector for
models such as IBM PC, XT, Personal System/2,
Compatible)

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10
MORE KEYBOARD PRINT RSS EXIT
HELP HELP INFO
```

---

## Exiting the RSS

Before you exit the RSS, always ask yourself these questions:

1. Did you apply the changes to the radio (save to the radio)?
2. Did you apply the changes to a computer file (save archive file)?

**Note: If you have not saved your changes to an archive file or to a radio codeplug at the time that you exit the RSS, all the changes will be lost.**

Press the **Esc** key to return to the MAIN MENU, and then press **F10** followed by **F2** to exit to the DOS prompt.

## Main Menu

The MAIN MENU is the top level of the program from which all RSS menus and screens can be accessed.

MOTOROLA Radio Service Software ASTRO Model: MAIN	Select Function F1 - F10.								
MAIN MENU ----- F1 - HELP F2 - SERVICE: Alignment (Requires RIB) F3 - GET/SAVE/PROGRAM/CLONE Codeplug Data from/to Disk/Radio F4 - CHANGE/VIEW Radio Codeplug Data F5 - PRINT Radio Codeplug Data F6 - FILE Maintenance F7 - F8 - FLASHport Upgrade F9 - SETUP Computer Configuration F10 - Exit Radio Service Software, Return to DOS									
F1 HELP	F2 SERVICE MENU	F3 GET SAVE	F4 CHANGE VIEW	F5 PRINT DATA	F6 FILE MAINT	F7	F8 FLASHport UPGRADE	F9 SETUP MENU	F10 EXIT TO DOS

All selections are made via the function keys, labeled **F1** through **F10** on the keyboard. All other menus contain an **Esc** key, and by pressing it the operator may at any time return to the MAIN MENU. The user must initially load data from a radio (or disk) using the GET/SAVE function before being allowed to CHANGE/VIEW any codeplug data.

**Note:** For any problems not covered by the Radio Service Software User's Manual or the Radio Service Manual, contact your local Motorola field technical representative.

## Function Key Descriptions

- F1 - HELP** Provides additional information on this screen. Generic help is available within any help screen in the form of the MORE HELP function.
- F2 - SERVICE** A multi-level menu that permits access to all radio service alignments through the service screens. *A radio must be connected to the computer via the RIB before you can access the service screens.* All service screens access the codeplug directly. Therefore, it is **NOT** necessary to read codeplug data before using the service screens.
- F3 - GET/SAVE** Used to read codeplug data from a radio and/or retrieve-archived codeplug data from a diskette or hard disk for editing purposes using the CHANGE/VIEW function. The GET/SAVE function is also used to program edited codeplug data back into the radio or to create an archive file on a diskette or hard disk.
- F4 - CHANGE/VIEW** A multi-level menu that is used to change, view, or modify codeplug features and option configurations. All radio codeplug parameters are classified as either RADIO WIDE, CONVENTIONAL, TRUNKED, or PERSONALITY-related. The CHANGE/VIEW menu permits access to each of these categories.

Unlike the SERVICE function, a codeplug must be loaded into the computer's memory using GET/SAVE functions before CHANGE/VIEW functions can be accessed. An archive file can be accessed without a radio being connected.

- F5 - PRINT MENU Prints selected codeplug data.
- F6 - FILE MAINT Allow access to archives so that you can retrieve codeplug data or find/create paths to enter or store archive files.
- F8 - FLASHport UPGRADE Allows you to upgrade your radio's internal software and/or add new options to your radio.
- F9 - SETUP MENU Used to configure the Radio Service Software according to specific user requirements. Default disk drives, communication ports, and even screen colors may be customized to the customer's specific needs.
- F10 - EXIT TO DOS Used to quit the program and return to DOS. Make sure that all desired codeplug changes have been programmed back to the radio and that an archive copy has been made. If this is not done, all changes will be lost as returning to DOS erases this data from the computer's memory.

## How to Read the Codeplug

1. Start up the RSS. If you are not already at the MAIN MENU, press any key at the BANNER screen to access the MAIN MENU.
2. From the MAIN MENU press **F3**; the GET/SAVE/PROGRAM MENU will be displayed.

You can read the codeplug from the radio or from the archive disk. After reading, the codeplug will be checked for valid serial number, model number, checksums, etc.

### Reading Codeplug Data from the Radio

Connect the radio to the computer according to instructions provided on page 10. Turn the radio on and press **F2**. A series of status messages will appear in the upper right corner of the screen. If a communication error occurs, a pop-up window will be displayed.

**Note:** Refer to Appendix A for an explanation of computer-to-radio communication error codes.

If no errors occur, the center of the screen will display the progress of the codeplug read activity. After the codeplug is read, the GET/SAVE/PROGRAM MENU will be displayed.

### Reading Disk Codeplug Files

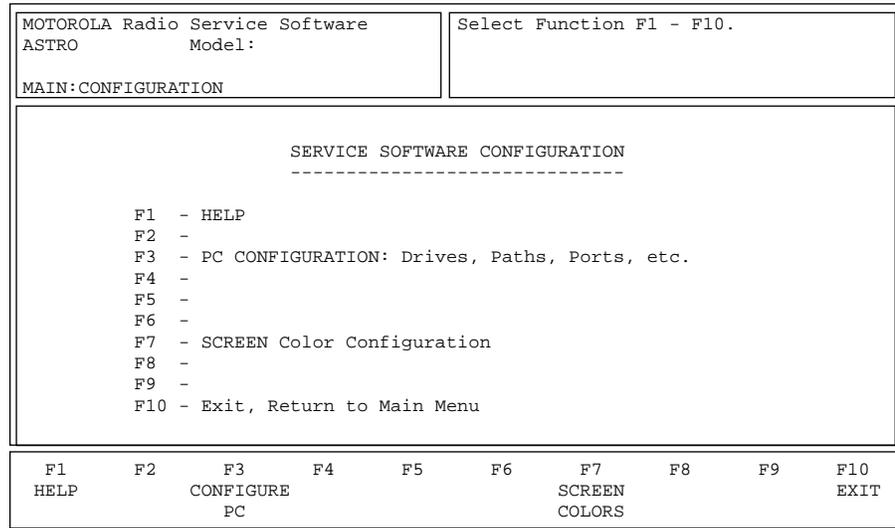
Press **F3** at the GET/SAVE/PROGRAM MENU. The ARCHIVE FILE screen will be displayed. An archive path and the list of files in that path will be displayed. By default, the path will be the corresponding archive path specified on the CONFIGURE PATHS AND PORT screen. If you want to retrieve a file from another path, press **F2**, type in the path name, and then press **Enter**. The names of the files in the new path will be displayed.

To retrieve a selected file, press **Tab** or **Enter** to move to the desired file and then press **F8**. The selected file will be retrieved, validated, and placed in computer memory. The progress of the read process will be displayed on the screen. To delete a file, select it and press **F5**.

# Service Software Configuration

## I

The SERVICE SOFTWARE CONFIGURATION screen can be accessed by pressing **F9** at the MAIN MENU.



From this screen, you can set up the paths for archive files. You will also be able to set up the serial port (COM 1 or COM 2) that will be used to communicate with the radio.

## Function Key Descriptions

### F1 - HELP

Provides useful information about the currently displayed menu, screen, or field.

### F3 - CONFIGURE PC

Used to set default disk drive paths for archive files and back-up files. It is also used to select the asynchronous communications port (COM 1 or COM 2) that the RIB will be connected to. The RSS will automatically determine what clock speed the computer is operating at.

**Note:** Refer to the owner's manual that came with your computer for a complete description of path names and asynchronous communication ports.

### F7 - SCREEN COLORS

Used to enable the monochrome display option. However, if the computer is capable of color display, viewing quality is greatly enhanced. The standard default configuration for the RSS is for a color display monitor.

### F10 - EXIT

Moves the display backward in the RSS tree, one screen or menu at time.

## Configure Paths and Port

# I C

From the MAIN MENU, press **F9** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter Path.								
MAIN:CONFIGURATION:PC									
CONFIGURE PATHS AND PORT -----									
Archive Path:....C:\MRSS\ASTRO\ARCHIVEM									
FLASH Software Path:..C:\MRSS\ASTRO\UPGRADE									
BootstrapCode Path & FileName:..C:\MRSS\ASTRO\UPGRADE\ASTROMBC.ENC									
SRIB Software Path & FileName:..C:\MRSS\ASTRO\SRIB\SMARTRIB.ENC									
System Key:.....									
RIB.....COM 1									
F1 HELP	F2	F3	F4	F5	F6 COM TEST	F7	F8 SAVE	F9	F10 EXIT

This screen is used to set default disk drive paths for archive files, back-up files, and TCMS authorization files. It is also used to select the asynchronous communications port (COM 1 or COM 2) that the RIB/SRIB (radio interface box) will be connected to.

**Note:** *The Archive Path and the Bootstrap Code Path and FileName entries in this example are for ASTRO Mobiles only.* For ASTRO Portables, the Archive Path will be C:\MRSS\ASTRO\ARCHIVEP and the Bootstrap Code Path and FileName will be C:\MRSS\ASTRO\UPGRADE\ASTROPBC.ENC.

**Note:** Refer to the owner's manual that came with your computer for a complete description of directory path names and asynchronous communications ports.

## Function Key Descriptions

**F6** - COM TEST  
(Communications Test)

Used to verify if your computer is set up correctly and is able to read and program a radio codeplug properly. After your computer and RIB are connected according to instructions in the Radio Service Software manual and you have selected the appropriate communication port, turn on your radio and execute the COM TEST function by pressing **F6**.

COM TEST will verify if your system is functioning properly by sending commands to the radio and checking for the proper response. No codeplug changes will result from these commands. An OK response will be displayed in the Status Window if the system checks OK. Otherwise, error messages will be displayed and you should consult Appendix A to diagnose the problem.

**F8** - SAVE

Used to save configuration information to a file on your program disk. The configuration that you saved last will be used every time you run the RSS. The configuration may be changed and saved at any time.

## Field Definitions

Archive Path	Enter the default directory path where archive files are to be located. The GET/SAVE:SAVE FILE function will default to this path. Refer to the owner's manual that came with your computer for a complete description of directories and path names.
FLASH Software Path	<p>Enter the default directory path where FLASHport Upgrade files are located. The default path established by the RSS installation program is C:\MRSS\ASTRO\UPGRADE.</p> <p><b>Note:</b> In order to ensure a successful FLASHport upgrade, it is <b>STRONGLY</b> recommended that none of the files installed by the RSS installation program be moved, overwritten by the user, or renamed.</p> <p>Prior to performing a FLASHport upgrade, the RSS displays the list of files that exist in the path entered here. You will then be asked to select the desired FLASHport Upgrade Software Kit and press <b>F8</b> to start the upgrade process.</p>
Bootstrap Code Path and FileName	Enter the default path and the default name for the bootstrap software used during FLASHport operation. The default path established by the RSS installation program is C:\MRSS\ASTRO\UPGRADE. The default file names are ASTROMBC.ENC and ASTROPBC.ENC for the Mobile and Portable RSS respectively.
SRIB Software Path and FileName	<p>Enter the default directory path and the default name for the SRIB software file. The default path established by the RSS installation program is C:\MRSS\ASTRO\SRIB, and the default file name is SMARTRIB.ENC.</p> <p><b>Note:</b> In order to ensure a successful FLASHport upgrade, it is strongly recommended that none of the files installed by the RSS installation program be moved, overwritten, or renamed.</p>
System Key	Enter the default DOS directory path where Trunking System Keys are to be located. The LOAD SYS KEY function will default to this path.
RIB	<p>Use the UP/DOWN arrow keys to select the asynchronous communications port (COM 1 or COM 2) that the RIB (Radio Interface Box) is connected to.</p> <p>If you are not sure how your computer is configured or if you have two asynchronous communications ports, first select COM 1 and use the COM TEST (<b>F6</b>) function to communicate with a radio. If the test fails, select COM 2 and repeat COM TEST. Make sure that all cables and power supplies are connected according to instructions provided in your RSS Manual. For a list of computer-to-radio communication error codes, refer to Appendix A.</p>

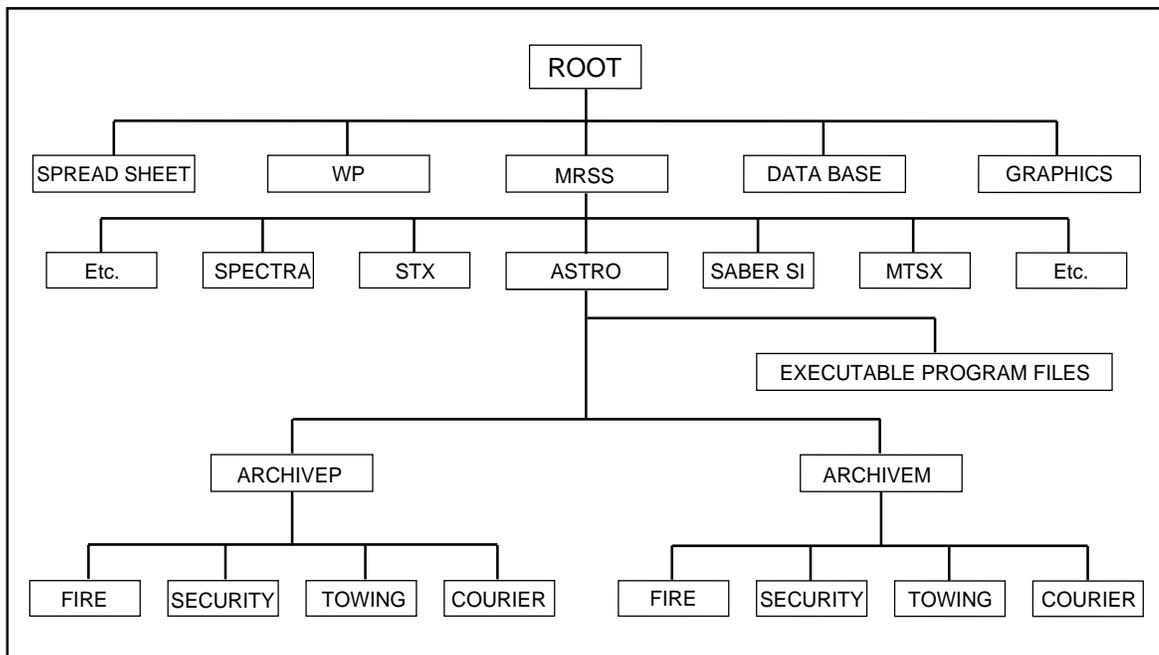
## Special Notes on Organizing Your Hard Disk

It is important to spend some time early on deciding which types or groups of files should be located together in the same file directory. File directories can be created using the DOS **MD** or **MKDIR** command.

You may want to organize your directories first by customer area, then by customer name, and finally by radio model type, or perhaps in the reverse order. When deciding how to organize your files and directories:

- Put as few directories as possible near the top, or root, of your directory tree. The next level of directories would be the *customer names* within each of those areas.
- Keep the RSS diskette contents in one directory and your archive files in a different directory.
- Keep archive files in separate directories according to the model of the radio being programmed. It is NOT possible to know a file's model type by simply looking at the file name. Have a separate directory name for each radio model, and then store the archive files for that specific model within the appropriate model directory. This way, archive files for multiple model types will not be located in the same directory. Storing archive files for different radio models in the same directory can cause a lot of confusion.

Below is a sample directory tree for storing your radio archive files on your computer's hard disk. This setup may be a starting point for you. The installation program will automatically create the MRSS and ASTRO directories for you if they do not exist.



**Note:** It is recommended that you use the serial numbers in the file name when you save codeplug configurations to archive and backup files. This will make it easier in future to identify the files and the models they relate to.

## Setting Screen Colors

# I G

From the MAIN MENU, press **F9** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
MAIN:CONFIGURATION:SCREEN COLORS									
SCREEN COLORS -----  MONITOR TYPE..... Color TEXT.....Light Gray STATUS TEXT.....Light Gray MESSAGE TEXT.....Light Gray HIGHLIGHT.....Yellow BACKGROUND.....Black FRAME.....Light Gray SELECTED TEXT.....Light Gray POPUP BACKGROUND.....Black									
F1 HELP	F2	F3	F4	F5	F6	F7	F8 SAVE	F9	F10 EXIT

This screen is used to select the type of display monitor that you are using with your computer, i.e., Monochrome or Color.

**Note:** For proper color operation, you must have a color monitor and the appropriate color display interface card must be installed in your computer. Please refer to the owner's manual that came with your computer and/or contact your computer dealer if you have questions regarding the color capability of your system.

You may also further customize your screen by selecting colors for the screen's text, status line, message line, highlighted text, background, frame, selected text and pop-up background.

**Note:** Screen configuration changes must be SAVED (**F8**) before you EXIT (**F10**) this screen.

## Function Key Description

**F8 - SAVE** Saves the configuration information to a file on your program disk. Every time you use the RSS, the configuration that you saved last will be used. The configuration may be changed and saved at any time.

## Field Definitions

**Monitor Type** Use the UP/DOWN arrow keys to select either a monochrome or color display monitor.

**Text** Use the UP/DOWN arrow keys to select the desired color for screen text.

**Status Text** Use the UP/DOWN arrow keys to select the desired color for the status text located in the lower portion of the top left-side window.

**Message Text** Use the UP/DOWN arrow keys to select the desired color for the message text located in the upper portion of the top right-side window.

Highlight	Use the UP/DOWN arrow keys to select the desired color for the highlighted screen text.
Background	Use the UP/DOWN arrow keys to select the desired color for the screen.
Frame	Use the UP/DOWN arrow keys to select the desired color of the screen outline.
Selected Text	Use the UP/DOWN arrow keys to select the desired color of the selected text.
Pop-up Background	Use the UP/DOWN arrow keys to select the desired color of the pop-up background.

# Notes

# Basic Radio Programming Tutorial

# 2

Now that the hardware and software installation is complete and the RSS is up and running, you are ready to program an ASTRO radio. The tutorial that follows will walk you through the procedure of programming specific features into a radio. The three tutorials are:

- Programming an ASTRO basic 16-channel Conventional radio and saving the radio's personality to codeplug and archive files.
- Programming an ASTRO Trunked radio.
- Cloning (copying) the personality data from an archive file of one already programmed radio to other radios. Cloning is performed when there is a need for multiple radios to be programmed with the same set of radio features and functions.

In each tutorial, the desired features for a particular application will be listed along with an overview (in a list format) of the major steps involved in programming the radio. These will be followed by detailed programming procedures.

---

## Programming a Basic 16-Channel ASTRO Conventional Radio

The tutorial assumes that the RSS is up and running and that you are at the MAIN MENU. (Refer to Section 1 for the RSS installation procedure.) Remember that **F1** displays help information about the currently highlighted field or the current screen. Press **F10** to back out of the RSS one menu level at a time and **Esc** to return to the MAIN MENU.

## Desired Features

Assume that the following features need to be programmed into the radio:

- 16 Transmit/Receive Frequencies, Analog only, Digital only, and mixed mode channels
- Private-Line/Digital Private-Line (TPL/DPL) Codes, and ASTRO Network IDs
- Scan is to be assigned to the concentric switch and two scan lists need to be created
- Telephone Operation needs to be enabled (*for full keypad models only*)

## Major Decisions Involved

To program the above features into the radio, follow this approach:

1. Determine the desired number of personalities (channels).
2. Determine the desired feature systems to use (basic, scan, signalling).
3. Determine the desired features to program radio-wide (all channels).
4. Determine the desired features to program for each personality (individual channels only).

## High-Level Programming Flow

The overview of the programming flow in this example is as follows:

1. Read the radio.
2. Assign button/switch functions that differ from factory defaults.
3. Create a second scan list. (List members are not filled in at this time.)
4. Set up the phone number list.
5. Create/configure conventional personalities.
6. Assign personalities to switch positions on the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**).
7. Fill in scan lists with the desired zone/channel entries.
8. Program the radio.

This programming flow has been chosen because it minimizes navigation between screens.

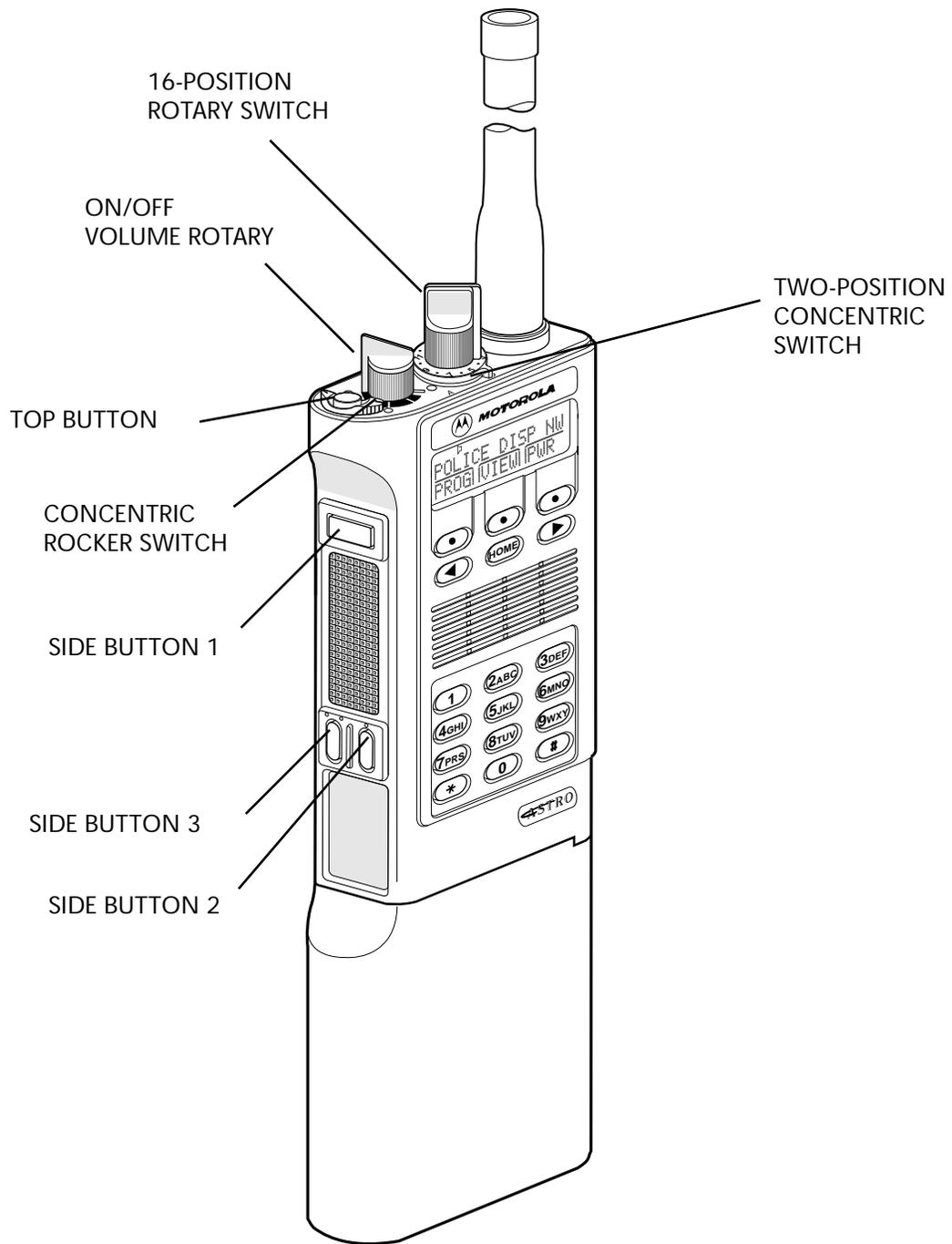
ASTRO Button/Switch/  
Menu Item Defaults

The ASTRO radio's button/switch/menu item defaults are provided below for your reference.

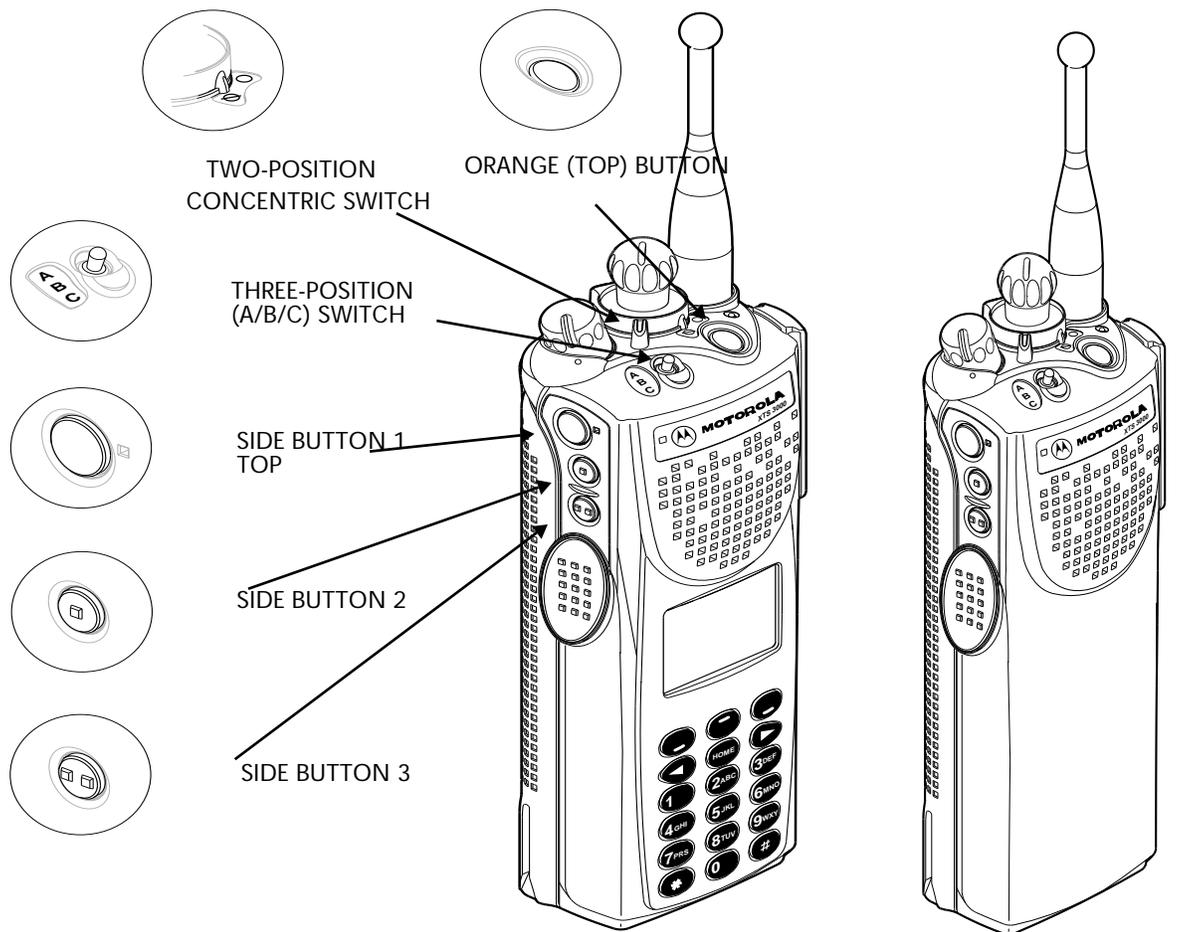
ITEM	ASTRO SABER I No Display No Keypad	ASTRO SABER II Two-line Display Limited Keypad	ASTRO SABER III Two-line Display Full Keypad	ASTRO XTS 3000 I No Display No Keypad	ASTRO XTS 3000 III Four-Line Display Full Keypad
Two-Position Switch	Zone Select	Blank/Scan	Blank/Scan	Blank	Blank
Three-Position Toggle Switch	<i>(Not Available)</i>	<i>(Not Available)</i>	<i>(Not Available)</i>	Zone Select	Blank  Blank/Scan/ Blank for H38 models
Orange Button	<i>(Not Available)</i>	<i>(Not Available)</i>	<i>(Not Available)</i>	Emergency	Emergency
Rocker Switch (flat)	Blank	Blank  Blank/Scan/ Blank for H38 models	Blank  Blank/Scan/ Blank for H38 models	<i>(Not Available)</i>	<i>(Not Available)</i>
Top Button	Emergency	Emergency	Emergency	<i>(Not Available)</i>	<i>(Not Available)</i>
16-Position Rotary	Channel Select	Channel Select	Channel Select	Channel Select	Channel Select
Side Button 1	Monitor	Monitor	Monitor	Monitor	Monitor
Side Button 2	Scan	Light	Light	Scan	Light
Side Button 3	Talkaround/ Direct	Talkaround/ Direct	Talkaround/ Direct	Talkaround / Direct	Talkaround/ Direct
Radio Type	Conventional or Trunked	Conventional or Trunked	Conventional or Trunked	Conventional or Trunked	Conventional or Trunked
Keypad Menus	<i>(Not Available)</i>	Mute/Zone/Prog View/Pwr (VHF/UHF)	Mute/Zone/Prog View/Pwr (VHF/UHF)	<i>(Not Available)</i>	Mute/Zone/Prog View/Pwr (VHF/UHF)

**NOTE:** Menu items apply to front-display radios only, and are accessed using the arrow keys on the radio keypad.





*ASTRO SABER Portable: Button and Switch Location Diagram  
(Button and Switch Location Purposes Only)*



XTS 3000 Full Keypad and Display Model

XTS 3000 Basic Model

**NOTE:** Call outs listed on the XTS3000 Full Keypad and Display Model, also refers to the XTS3000 Basic Model.

*ASTRO XTS 3000 Portable: Button Location Diagram (Button Location Purposes Only)*

## Step-by-Step Programming Instructions

The directions below are designed to give you an overview of the radio programming procedure. Use the sample chart for a Conventional radio on page 30 to record the features that you wish to program into your radio. Refer to Appendix F for a blank form you can use for other Conventional radios.

### Read Current Radio's Personality (Codeplug)

Before you program the ASTRO radio, you must first read and access the current radio's personality (codeplug data). Follow these steps to read the codeplug:

1. At the MAIN MENU, press **F3** to get to the GET/SAVE MENU.
2. Press **F2** to retrieve the current radio's codeplug data. A status bar will keep you updated as to how much of the codeplug has been read.

### Program Radio-Wide Features

After the ASTRO radio's codeplug data is read, the RSS will allow you to access the CHANGE/VIEW MENU. From this menu, you can program the features you desire for each channel, and the ones you want to be common to all channels. First, program the common (radio wide) features.

***NOTE:** Some screens cannot be accessed and many parameters will be at factory default values which are suitable in most cases.*

Follow the steps below to program radio wide features:

1. From the MAIN MENU, press **F4** to bring up the GET/SAVE MENU.
2. At the CHANGE/VIEW MENU, press **F3** to bring up the RADIO WIDE CONFIGURATION MENU.
3. At the RADIO WIDE CONFIGURATION MENU, press **F3** to bring up the RADIO WIDE FEATURES CONFIGURATION MENU.
4. Press **F3** to bring up the RADIO WIDE SWITCH CONFIGURATION screen. The two-position concentric switch, Position A (Conventional Feature) will be highlighted.
5. Use the UP/DOWN arrow keys to select Scan for Position A, and Blank for Position B.

***NOTE:** We will assume that the factory defaults are suitable for the remaining controls.*

6. Press **F10** twice to bring up the RADIO WIDE CONFIGURATION MENU.
7. Press **F5** to access the SCAN LISTS AND OPTIONS screen. The Conventional Scan Type will be highlighted.
8. Press **F2**. A second scan list will be created. Scan List members will be added after information has been entered in the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**).
9. Press **F10** to return to the RADIO WIDE CONFIGURATION MENU.

## Program the Phone List (if applicable)

Listed below are the steps required to create a phone list for an ASTRO radio (*This task can be programmed ONLY if the Phone List feature is available on the current model*):

1. Press **F4** at the RADIO WIDE CONFIGURATION MENU to bring up the PHONE CONFIGURATION screen.
2. Press **Tab** as many times as necessary to advance the prompt to the Phone Num Display Format field.
3. Use the UP/DOWN arrow keys to select USA.
4. Press **Tab** to advance the prompt to the Phone Number field.
5. Type in the desired phone number.
6. Press **Tab** to advance the prompt to the Phone Text field.
7. Type in the desired name.
8. Repeat steps 4 through 7 to add additional phone numbers and names. Press the **Pg Dn/Pg Up** keys to access the next/previous screen of phone numbers.
9. Press **F10** twice to return to the CHANGE/VIEW MENU.

## Program Conventional Personalities

Follow the steps listed below to program Conventional personalities:

1. From the CHANGE/VIEW MENU, press **F6** to bring up the CONVENTIONAL MENU.
2. Press **F3** to access the CONVENTIONAL PERSONALITY screen. The personality number will be highlighted. Add new personalities by pressing **F2**, and then **F2** again to insert after the current personality or **F3** to add to the end of the list. Repeat this until the desired number of personalities are added. Press **F4** to return to Personality 1.
3. Press **Tab** to advance to the Scan List field. Use the UP/DOWN arrow keys to select the appropriate scan list, "1" or "2".
4. Press **Tab** to advance the prompt to the Phone Operation field. Use the UP/DOWN arrow keys to scroll through the available choices (None, Unlimited or List Only) and make your selection.
5. Press **Tab** to advance the prompt to the Rx Voice/Signal Type field. Select the appropriate signalling type (ASTRO, Non ASTRO, or Mixed Mode) using the UP/DOWN arrow keys.
6. Press **Tab** to advance the prompt to the Receive Frequency field. Type in frequency data or make a selection using the UP/DOWN arrow keys. If the Rx Voice/Signal Type is ASTRO, skip to step 9.
7. Press **Tab** advance the prompt to the Receive Squelch Type field. Use the UP/DOWN arrow keys to select PL, DPL or CSQ.
8. If your selection for Squelch Type is PL or DPL, press **Tab** to advance the prompt to the Code field. Use the UP/DOWN arrow keys to scroll for choices, or type in the code directly.
9. Press **Tab** to advance the prompt to the Transmit Frequency field. Type in frequency data, or use the UP/DOWN arrow keys to scroll through the available choices and make the desired selection. If the Rx Voice/Signal Type is ASTRO, skip to step 14.

10. Press **Tab** to advance the prompt to the Transmit Squelch Type field. Use the UP/DOWN arrow keys to select PL, DPL, or Disabled.
11. If your selection for Squelch Type is PL or DPL, press **Tab** to advance the prompt to the Code field. Use the UP/DOWN arrow keys to scroll for choices, or type in the code directly.
12. Press **Tab** to advance the prompt to the Signalling Type field and select "MDC" or "None".
13. Press **Tab** to advance the prompt to the Tx Voice/Signal Type field. Press the UP/DOWN arrow keys to select ASTRO or Non-ASTRO. If the Rx Voice/Signal Type is Non-ASTRO, skip to step 17.
14. Press **F9** and then **F6** to access the ASTRO OPTIONS screen. Press **Tab** to advance the prompt to the Rx Network ID field. Using the UP/DOWN arrow keys or keyboard numbers, and enter the desired Rx Network ID.
15. Press **Tab** to access the Tx Network ID field and enter the desired ID.
16. Press **F10** twice to return to the CONVENTIONAL PERSONALITY screen. Press **F4** to advance to the next personality.
17. Repeat steps 3 through 16 for additional personalities.

## Program Zone/Channel Features

Now that the personalities are programmed, follow the steps below to assign the personalities to switch positions in the ZONE/CHANNEL ASSIGNMENT screen. The channels in a zone should be grouped in some logical way, such as by geographical area or work group.

1. Press **Esc** to return to the MAIN MENU. Press **F4** to access the CHANGE/VIEW MENU. Press **F8** to bring up the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen.
2. Add the desired number of channels by pressing **F6** and the **F2** to insert after the current entry or **F3** to add to the end of the list. Repeat this step as many times as necessary.
3. Press the **Pg Dn** key to advance to Page 1.
4. Press **Tab** to advance the prompt to the Zone Name field.
5. Type a name up to three characters in length.  

**NOTE:** The character field may be changed to accommodate a maximum of 14 characters for ASTRO SABER and 12 characters for XTS3000, from the DISPLAY OPTION screen (**F4/F3/F6**).
6. Press **Tab** to advance the prompt to the Channel Name field.
7. Type the name of channel that you desire. The name can be up to 11 characters for ASTRO SABER and 12 characters for XTS3000 in length.  

**NOTE:** The character field can be modified to accommodate a maximum of 14 characters for ASTRO SABER, 12 for XTS3000, from the DISPLAY OPTIONS screen (**F4/F3/F6**).
8. Press **Tab** to advance the prompt to the Personality Number field. Type the desired personality number or use the UP/DOWN arrow keys to make your selection.

9. Repeat steps 6 through 8 for the other channels.
10. Press **F10** to return to the CHANGE/VIEW MENU.

**NOTE:** If more than 16 personalities (channels) were created, an additional zone will be required. Zones can be added on the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**) by pressing **F2**.

## Fill In the Scan List

Now that the Zone/Channel features have been programmed, fill in the Scan List as follows:

1. From the CHANGE/VIEW MENU, press **F3** to access the RADIO WIDE CONFIGURATION MENU.
2. Press **F5** to bring up the SCAN LIST screen. If “1” is not already displayed under Scan List number, press **F3** to see the previous list. If “1” is displayed, proceed to the next step.
3. Press **Tab** to advance the prompt to the Member Zone (Zn) field.
4. Type the number of the zone to be scanned. (Type “1” for purposes of this tutorial.) Press **Enter**.
5. Type the desired channel number and press **Enter** to select this number.

Repeat steps 3 through 5 until all the desired channels are entered.

6. If you have created a Scan List with more than 8 members, press **Pg Up/Pg Dn** to access all members of the Scan List. We will assume that factory defaults are suitable for the remaining fields.
7. Press **Esc** to return to the MAIN MENU.

## Program Personality into the Codeplug

Now that you have set values for all the features you want, it is time to actually program them into the radio.

**NOTE:** Programming the personality into the radio's codeplug must be done **after** creating or editing the personality of a radio or else the changes will be lost.

1. Press **F3** at the MAIN MENU to bring up the GET/SAVE MENU.
2. Press **F8** at the GET/SAVE MENU to bring up the PROGRAM CODEPLUG screen. The current data stored in the computer's RAM (what you can see on the RSS screens) will be programmed into the radio's codeplug.

**NOTE:** *Make sure that the radio is connected to the RIB and that both the RIB and the radio are powered up before pressing **F8**.*



Caution

When programming or tuning a radio DO NOT disconnect the radio from the RIB when the computer is communicating with the radio. This action may leave the radio in an inoperable state. Disconnect the radio **only** when you are in the MAIN MENU or GET/SAVE screens.

## Program Personality into Archive and Back-up Files

You have just saved the personality to the radio, but it is important to save it on disk to archive and back-up files just in case it is needed later. Below are the steps to save the radio's personality to archive and back-up files.

1. Press **F3** at the MAIN MENU to bring up the GET/SAVE/PROGRAM MENU.
2. Press **F7** at the GET/SAVE/PROGRAM MENU to access the SAVE CODEPLUG DATA TO ARCHIVE FILE screen. The archive diskette drive and path name, current model number, and current radio serial number will be displayed on this screen.
3. Change the archive file path name and archive file name if necessary.
4. Insert a formatted diskette or your existing back-up diskette into drive A (or the floppy drive of your choice).
5. Press **F8** at the SAVE CODEPLUG DATA TO ARCHIVE FILE screen to save the data in the archive file whose name you specified in step 3.

---

## Programming a Basic ASTRO Trunked Radio

In this tutorial, we list the desired features, address the major decisions involved, and give step-by-step instructions for programming a basic ASTRO Trunked portable radio. We will assume that the factory defaults are suitable for most parameter values and the radio is equipped with a secure option.

### Desired Features

Let's assume the following features are desired:

- One Trunking system, two talkgroups (*System Key is required to accomplish this.*)
- Talkgroup scan with one list
- Telephone interconnect with a phone list
- Private Call with call list

### Major Decisions Involved

To program the above features into the radio, follow this approach:

1. Determine the desired number of systems/talkgroups and their configuration.
2. Determine the desired feature systems to use (basic, scan, etc.).
3. Determine the desired features to program radio wide (all systems).
4. Determine the desired features to program for each system, personality, etc.

### High-Level Programming Flow

The overview of the flow of programming in this example is as follows:

1. Read the radio.
2. Assign button/switch functions that differ from factory defaults.
3. Program the phone list.
4. Reference the scan list to each personality.

5. Assign personalities to switch positions on the ZONE/CHANNEL ASSIGNMENT screen (F4/F8).
6. Fill in the scan list with desired zone/channel entries.
7. Program the radio.

## Step-by-Step Programming Instructions

The directions below and the button/switch/menu item defaults listed below for each model are designed to guide you in programming a basic ASTRO Trunked Radio. Use the sample chart for a Trunked radio on the following page to record the features that you wish to program into your radio. Refer to Appendix E for a blank form you can use for Trunked radio programming in future.

### ASTRO SABER I Radio Button/Switch/Menu Item Defaults

The ASTRO SABER radio's button/switch/menu item defaults are provided below for your reference:

ITEM	H35	H37	H38
Top Button	Emergency	Emergency	Emergency
16-Position Rotary	Channel Select	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Unprogrammed	Call Response
Side Button 2	Scan	Scan	Scan
Side Button 3	Talkaround/ Direct	Private Call	Site Display/ Search
Two-Position Concentric Switch	Zone Select	Zone Select	Zone Select
Concentric Rocker Switch	Blank	Blank	Blank

### ASTRO XTS 3000 I Radio Button/Switch/Menu Item Defaults

The ASTRO XTS 3000 radio's button/switch/menu item defaults are provided below for your reference:

ITEM	H35	H37	H38
Orange (Top) Button	Emergency	Emergency	Emergency
16-Position Rotary	Channel Select	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Unprogrammed	Call Response
Side Button 2	Scan	Scan	Scan
Side Button 3	Talkaround/ Direct	Private Call	Site Display/Search
Two-Position Concentric Switch	Blank	Blank	Blank
Three-Position Toggle	Zone Select	Zone Select	Zone Select

ASTRO SABER II Radio  
 Button/Switch/Menu  
 Item Defaults

The ASTRO SABER radio's button/switch/menu item defaults are provided below for your reference:

ITEM	H35	H37	H38
Top Button	Emergency	Emergency	Emergency
16-Position Rotary	Channel Select	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Phone	Phone
Side Button 2	Light	Light	Light
Side Button 3	Talkaround/ Direct	Private Call	Site Display/ Search
Two-Position Concentric Switch	Blank (A) Scan (B)	Blank (A) Scan (B)	Blank
Concentric Rocker Switch	Blank	Blank	Blank (1) Scan (2)

Trunked Radio Personality Chart

Feature Name	Example	Pers 1	Pers 2	Pers 3	Pers 4	Pers 5	Pers 6	Pers 7	Pers 8	Pers 9	Pers 10	Pers 11	Pers 12	Pers 13
System Type	I/Ili													
System ID	0293													
Individual ID	200													
Coverage Type	SMARTZONE													
Affiliation Type	Auto													
Control Channel 1	961.5625													
Control Channel 2	981.0875													
Talkgroup 1	E01													
Talkgroup 2	E03													
TG Strapping	Digital													
Zone	1													
Scan List	1													
Scan Type	Talkgroup													
Interconnect	Unlimited													
Phone Display Format	USA													
Private Call	Yes													
Private Call Type	EPC													
Private Call Operation	Unlimited													

ASTRO SABER III Radio  
Button/Switch/Menu  
Item Defaults

The ASTRO SABER radio's button/switch/menu item defaults are provided below for your reference:

ITEM	H35 Full Display Full Keypad	H37 Full Display Full Keypad	H38 Full Display Full Keypad
Top Button	Emergency	Emergency	Emergency
16-Position Rotary	Channel Select	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Phone	Phone
Side Button 2	Light	Light	Light
Side Button 3	Talkaround/ Direct	Private Call	Site Display/Search
Two-Position Concentric Switch	Blank (A) Scan (B)	Blank (A) Scan (B)	Blank
Concentric Rocker Switch	Blank (1)	Blank	Blank (1) Scan (2)

ASTRO XTS 3000 III  
Radio Button/Switch/  
Menu Item Defaults

The ASTRO XTS 3000 radio's button/switch/menu item defaults are provided below for your reference:

ITEM	H35	H37	H38
Orange (Top) Button	Emergency	Emergency	Emergency
16-Position Rotary	Channel Select	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Phone	Phone
Side Button 2	Light	Light	Light
Side Button 3	Talkaround/Direct	Private Call	Site Display/Search
Two-Position Concentric Switch	Blank	Blank	Blank
Three-Position Switch	Blank (1) Scan (2) Blank (3)	Blank (1) Scan (2) Blank (3)	Blank (1) Scan (2) Blank (3)

ASTRO Mobile  
Radio  
Conventional/  
Trunking Button  
Locations

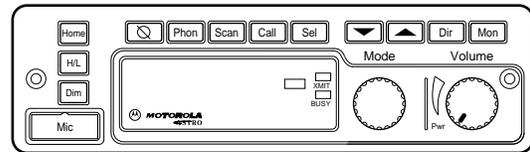
**W3 Conventional/Trunking Control Head Button Locations**

Emer	Emergency
Sec	Secure
Lght	Backlight
Scan	Scan
Mon	Monitor
Blnk	Blank



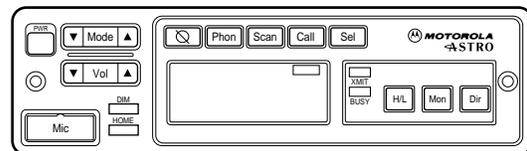
**W4 Conventional/Trunking Control Head Button Locations**

H/L	Horn and Light Button
Sec	Secure
Phone	Phone
Scan	Scan
Call	Call
Sel	Select
Dir	Talkaround (Direct)
Mon	Monitor



**W5 Conventional/Trunking Control Head Button Locations**

Sec	Secure
Phone	Phone
Scan	Scan
Call	Call
Sel	Select
H/L	Horn and Light Button
Mon	Monitor
Dir	Talkaround (Direct)



*ASTRO Mobile Control Head Button Location Diagrams (Button Location Purposes Only)*

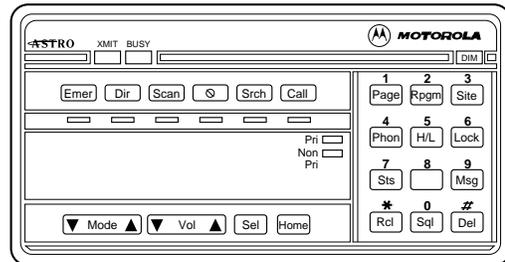
## W7 Conventional/Trunking Control Head Button Locations

Sec	Secure
Phone	Phone
Scan	Scan
Call	Call
Sel	Select
AMSS Lock	AMSS Lock
Ste	Site
Sts	Status
Msg	Message
H/L	Horn and Light Button
Mon	Monitor
Dir	Talkaround (Direct)



## W9 Conventional/Trunking Control Head Button Locations

Mon	Monitor
Page	Page
AMSS Lock	AMSS Lock
Phone	Phone
H/L	Horn and Light Button
Ste	Site
Sel	Select
Emer	Emergency
Dir	Talkaround (Direct)
Scan	Scan
Sec	Secure
Call	Call



*ASTRO Mobile Control Head Button Location Diagrams (Button Location Purposes Only) (Continued)*

## Read Current Radio's Personality (Codeplug)

Before you can program the ASTRO radio, you must first read and access the current radio's personality (codeplug data). Follow these steps to read the codeplug:

1. At the MAIN MENU, press **F3** to get to the GET/SAVE/PROGRAM MENU.
2. Press **F2** to get the current radio's codeplug data. A status bar will keep you updated as to how much of the codeplug has been read.

## Program the Radio-Wide Features

After the radio's codeplug data has been read, the RSS will allow you to access the CHANGE/VIEW MENU. From this menu, you can program the features you want on each system or personality, and the ones you want to be common to all systems and personalities. Program the common (radio-wide) features first.

**NOTE:** *Some screens cannot be accessed and many parameters are still at factory default values which are suitable in most cases.*

## Program Trunking Systems

After the radio's codeplug is read, the RSS will allow you to access the CHANGE/VIEW MENU. From here, you can program the Trunking system desired. To add a Trunked SMARTZONE system and control channels, follow the steps below:

**NOTE:** You must have a System Key to add a Trunking System.

1. From the MAIN MENU, press **F4** to access the CHANGE/VIEW MENU.
2. At the CHANGE/VIEW MENU, press **F4** to bring up the TRUNKING MENU.
3. Press **F3** to bring up to the TRUNKING SYSTEM screen.
4. Press **F2** to add a system.
5. Press **Tab** to advance the prompt to the System Type field.
6. Use the UP/DOWN arrow keys to select II/Ili.
7. Press **Tab** to advance the prompt to the System ID field.
8. Type in the desired System ID
9. Press **Tab** to advance the prompt to the individual ID field.
10. Type in the desired Individual ID
11. Press **Tab** to advance the prompt to the Coverage Type field.
12. Use the UP/DOWN arrow keys to select SMARTZONE.
13. Press **Tab** to advance the prompt to the Affiliation Type field.
14. Use the UP/DOWN arrow keys to select Automatic.
15. Press **F6** to access the CONTROL CHANNEL screen.
16. Press **F2** to add the desired number of channels.
17. Press **Tab** to advance the prompt to the Frequency Number fields.
18. Type in the desired frequency.
19. Press **F10** as many times as necessary to access the TRUNKING MENU.

## Program Trunking Personalities

After the Trunked system has been added, a Trunking personality must be created to support that system. Follow the steps below to program a Trunking personality with two talkgroups.

**NOTE:** You must have a System Key to create a Trunking personality.

1. From the TRUNKING MENU, press **F4** to go to the TRUNKING PERSONALITY screen.
2. Press **F2** to add a personality. Press **F2** again to insert after the current entry or **F3** to add to the end of the list.
3. Press **Tab** to advance the prompt to System ID field.
4. Use the UP/DOWN arrow keys to select the desired System ID.
5. Press **F7** to access the TRUNKING TALKGROUPS screen.
6. At the Tlk Grp field enter the desired Talkgroup ID.
7. Press **Tab** to advance the prompt to the Tx Voice/Signal Type Field.
8. Use the UP/DOWN arrow keys to make your selection.
9. Press **F2** to add a Talkgroup.

Repeat steps 6 through 8 for each additional Talkgroup.

10. Press **F10** three times to exit to the CHANGE/VIEW MENU.

## Program Zone/Channel Features

Now that the Trunking personalities are programmed, follow the steps below to assign these personalities to rotary channel positions in the ZONE/CHANNEL ASSIGNMENT screen.

1. Press **F4** from the MAIN MENU to access the CHANGE/VIEW MENU. Press **F8** to bring up the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen.
2. If the Trunking Personalities are to be added to a new zone, press **F2** to add a Zone. Press **F2** again to insert after the current entry or **F3** to add to the end of the list.
3. Press **Tab** to advance to the Zone Name field.
4. Type in the desired Zone name.
5. Press **F6** as many times as necessary to add the desired number of channels.
6. Press **Tab** to advance to the Channel Name field.
7. Type in the desired Channel Name.
8. Press **Tab** to advance the prompt to the Personality Type field.
9. Use the UP/DOWN arrow keys to select "Trunk".
10. Press **Enter** or **Tab** to advance to Personality Number field and enter the desired personality number.
11. Repeat steps 6 and 10 for additional Channel numbers.
12. Press **F4** to go to the next zone.

Repeat steps 4 through 9 for each Zone.

13. Press **F10** to exit to the CHANGE/VIEW MENU.

## Create a Talkgroup Scan with One List

Now that the Zone/Channel features are programmed, fill in the Scan List as follows:

1. From the CHANGE/VIEW MENU, press **F3** to access the RADIO WIDE CONFIGURATION MENU.
2. From the RADIO WIDE CONFIGURATION MENU, press **F5** to bring up the SCAN LIST screen. If "1" is not already displayed for Scan List number, press **F3** to see previous list. If "1" is displayed, proceed.
3. If Scan Type is not already highlighted, press **Tab** to advance the prompt to Scan Type field.
4. Use the UP/DOWN arrow keys to select Talkgroup Scan Type.
5. Press **Tab** to advance the prompt to the Zn field of Scan List Member # 1.
6. Press the UP/DOWN arrow keys to select desired zone or enter the desired zone number directly.
7. Press **Tab** to advance the prompt to the Chn field.
8. Use the UP/DOWN arrow keys to select desired channel or enter channel number.

Repeat steps 5 through 7 until desired channels are entered. If you have created more than one Scan List, repeat the entire sequence described above for each scan list.

9. Press **F10** twice to exit to the CHANGE/VIEW MENU.

## Program the Phone List

Now go on to program the Phone List as follows:

1. Press **F4** at the CHANGE/VIEW MENU to bring up the TRUNKING MENU.
2. Press **F4** to bring up the TRUNKING PERSONALITY screen.
3. Press **Tab** to advance the prompt to Phone Interconnect field.
4. Use the UP/DOWN arrow keys to select Unlimited or List Only.
5. Press **Tab** to advance the prompt to the Scan List field.
6. Use the UP/DOWN arrow keys to select a Scan List that can be used for this personality.
7. Press **F4** to access the next personality.

Repeat steps 5 through 7 for each additional personality and each additional Scan List.

8. Press **F10** twice to access the CHANGE/VIEW MENU.
9. At the CHANGE/VIEW MENU, press **F3** to bring up the RADIO WIDE CONFIGURATION MENU.
10. Press **F4** at the RADIO WIDE CONFIGURATION MENU to bring up the PHONE CONFIGURATION screen.
11. Press **Tab** to advance the prompt to Phone Num Display Format field.

12. Use the UP/DOWN arrow keys to select USA.
13. Press **Tab** to advance the prompt to the Phone Number field.
14. Type in desired phone number.
15. Press **Tab** to advance the prompt to the Phone Text field.
16. Type in the desired name.

Repeat steps 13 through 16 to add the desired phone numbers and names.

17. Press **F10** to go to the CHANGE/VIEW MENU.

#### Program Private Call with a Call List

Next, program Private Call with a Call List as follows:

1. From the CHANGE/VIEW MENU, press **F4** to access the TRUNKING MENU.
2. At the TRUNKING MENU, press **F4** to bring up the TRUNKING PERSONALITY screen.
3. Press **Tab** to advance the prompt to the Private Call Type field.
4. Use the UP/DOWN arrow keys to select Enhanced PC.
5. Press **Tab** to advance the prompt to the Operation field.
6. Use the UP/DOWN arrow keys to select Unlimited.
7. Press **F10** to exit to the TRUNKING MENU.
8. Press **F5** to bring up the CALL LIST TABLE screen.
9. Press **Tab** to advance the prompt to the Call ID field.
10. Enter the Call ID number.
11. Press **Tab** to advance the prompt to the Call Text field.
12. Enter the desired name.
13. Press **Esc** to exit to the MAIN MENU.

#### Assign Controls

Follow the steps below to assign button and switch functions for ASTRO SABER and XTS3000 radios.

1. Press **F4** from the MAIN MENU to access the CHANGE/VIEW MENU. Press **F3** to access the RADIO WIDE CONFIGURATION MENU.
2. Press **F3** again to bring up the RADIO WIDE FEATURES CONFIGURATION MENU.
3. Press **F2** to bring up the RADIO WIDE BUTTON CONFIGURATION screen.
4. Press **Tab** to advance to 16 Pos Rotary field.
5. Use the UP/DOWN arrow keys to choose Channel Select.
6. Press **F10** to return to the RADIO WIDE FEATURES CONFIGURATION MENU.
7. Press **F3** to bring up the RADIO WIDE SWITCH CONFIGURATION screen. The Two-Position Concentric field (Conventional Feature) will be highlighted.

8. For *ASTRO SABER* radios, press the UP/DOWN arrow keys to select Scan for position A and Blank for position B. For *XTS 3000* radios, press **Tab** to advance to the Three-Position Toggle Switch and then press the UP/DOWN arrow keys to select Scan for position A and Blank for positions B and C.
9. Press **Tab** to advance to the Rocker Switch field (for *ASTRO SABER* radios) or to the Two-Position Concentric Switch (for *XTS 3000* radios).
10. Use the UP/DOWN arrow keys to select Secure Tx for position B (*XTS 3000* radios) or Position 2 (*SABER* radios) as appropriate.  
**NOTE:** You must have a Secure-equipped radio to perform this step.
11. Press **Esc** to return to the MAIN MENU.

## Program Personality into the Radio Codeplug

Now that you have set values for all the features you want, it is time to actually program them into the radio. *Programming the personality into the radio's codeplug must be done **after** creating or editing the personality of a radio or else the changes will be lost.*

1. Press **F3** at the MAIN MENU to bring up the GET/SAVE MENU.
2. Press **F8** at the GET/SAVE MENU to bring up the PROGRAM RADIO screen. The current data stored in the computer's RAM (what you can see on the RSS screens) is programmed into the radio's codeplug. *Make sure that the radio is connected to the RIB and that both the RIB and the radio are powered up before pressing **F8**.*



Caution

When programming or tuning a radio DO NOT disconnect the radio from the RIB when the computer is communicating with the radio. This action may leave the radio in an inoperable state. Disconnect the radio **only** when you are in the MAIN MENU or GET/SAVE screens.

## Program Personality into Archive and Back-up Files

You have just saved the personality to the radio, but it is important to save it on disk to archive and backup files for future use. Below are the steps to save the radio's personality to archive and backup files.

1. Press **F3** at the MAIN MENU to bring up the GET/SAVE/PROGRAM MENU.
2. Press **F7** at the GET/SAVE/PROGRAM MENU to access the SAVE CODEPLUG DATA TO ARCHIVE FILE screen. The archive diskette drive and path name, current model number, and current radio serial number will be displayed on this screen.
3. Change/specify the archive file path name and archive file name if necessary.
4. Insert a formatted diskette or your existing backup diskette into drive A (or the floppy drive of your choice) if you are saving the file to a diskette.
5. Press **F8** at the SAVE CODEPLUG DATA TO ARCHIVE FILE screen to save the data in the archive file specified above.

---

## Cloning Radios

Cloning is a process by which codeplug information is copied from one radio to another, or to multiple others. *To clone one radio with information from another, both must be of the same model number and have the same upgrade options.* Cloning applies predominantly to Conventional-only radios.

**NOTE:** *To clone Trunked radios, you must have a System Key on file for EACH of the Trunked systems programmed into the source radio.* Most organizations that program Trunked radios will not have access to these keys. The process of cloning Conventional and Trunked radios, however, is the same.

## Major Decisions Involved

The major steps for cloning in this tutorial are:

1. Choose the archive file that you wish to copy.
2. Decide how many radios to clone.

## Step-by-Step Specific Cloning Instructions

To clone a radio, you must:

1. Read into the RSS the specific archive file you want to clone.
2. Clone that source file into the current (target) radio's codeplug.
3. Clone the remaining radios using the same procedure.

These steps are detailed below.

## Clone Current Radio From Archive File

Radio codeplugs consist of both personality and tuning data. Cloning allows you to “merge” data from two codeplugs into one. The archive file or radio with the desired personality will be referred to as the “source file” or “source radio”. The radio which is to be programmed using information from the source radio will be referred to as the “target radio”.

The result of the cloning process will be an image or collection of personality data that can be programmed into a radio and/or saved to

an archive file. This image will have the source codeplug's personality, but the tuning data of the target codeplug will remain unchanged.

In this tutorial, the source personality is the file saved in the first tutorial, and the target radios are the remaining radios that have not yet been programmed.

**NOTE:** The IDs for MDC-1200, DTMF, etc. must be changed manually if you want to have unique IDs! You may do this by accessing the CHANGE/VIEW immediately after cloning each radio.

Follow the steps below to perform the cloning operation:

1. Press **F3** at the MAIN MENU to bring up the GET/SAVE MENU.
2. Press **F3** again to bring up the GET ARCHIVE FILE screen. A list of file names will be displayed. These file names reflect the serial numbers that the RSS found in the archive path name specified. The name of the file that you saved in the first tutorial should appear in this list.
3. Press **Tab** until the desired file is highlighted.
4. Press **F8** to retrieve the selected (highlighted) file.
5. Press **F10** to return to the GET/SAVE MENU.
6. Assemble the hardware and connect the radio that you wish to clone (i.e. the "target" radio).
7. Press **F5** at the GET/SAVE MENU to bring up the CLONE screen.
8. Press **F2** to read the serial number from the target radio.
9. Press **F8** to program the current codeplug data into the target radio.
10. You may now disconnect the radio.



Caution

When programming or tuning a radio DO NOT disconnect the radio from the RIB when the computer is communicating with the radio. This action may leave the radio in an inoperable state. Disconnect the radio **only** when you are in the MAIN MENU or GET/SAVE screens.

Repeat steps 6 through 10 to clone additional radios as necessary.

**NOTE:** If the radios cannot be cloned for some reason, an error message will appear. Check all connections or refer to Appendix A for a list computer-to-radio communication error codes and their explanations.

---

Exit the RSS

Press **Esc** as many times as necessary to back up to the MAIN MENU. At the MAIN MENU, press **F10** and then **F2** to exit to DOS.

This completes the tutorial.

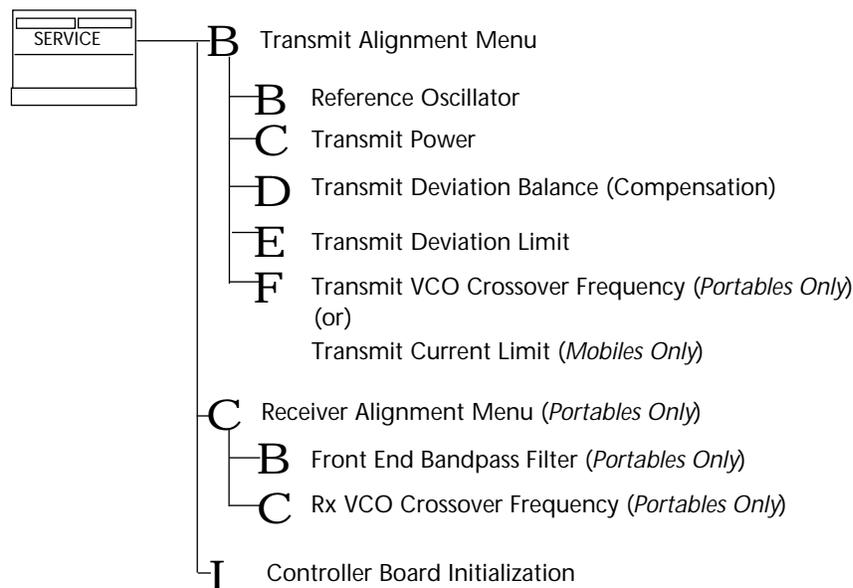
# Service Menu Functions

## Servicing the Radio Using the RSS

Now that the hardware and software installation is complete and the RSS is up and running, you are ready to personalize the radio(s). The following pages service as a guide to a qualified service technician in keeping a radio operating at full capability throughout its design life by means of correct alignments and configurations.

**Note:** All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

## Menu Map



## Service Menu

Press **F2** at the MAIN MENU to access the SERVICE MENU.

# B

MOTOROLA Radio Service Software ASTRO Model: MAIN:SERVICE	Select Function F1 - F10. Read Radio Completed Successfully.								
SERVICE MENU -----									
F1 - HELP F2 - Transmitter Alignments F3 - Receiver Alignments F4 - F5 - F6 - F7 - F8 - F9 - Controller Board Initialization Program F10 - EXIT, Return to Service Menu									
F1 HELP	F2 TX ALIGN	F3 RX ALIGN	F4	F5	F6	F7	F8	F9 BOARD INITIALIZE	F10 EXIT

**Note:** Receiver Alignment applies to Portable radios only.

All radio alignment and board replacement procedures can be accessed from the SERVICE MENU.

**Note:** A radio must be connected to your computer using a RIB and cables and the radio turned on before you will be permitted to access the SERVICE screens.

 Caution	Do NOT switch radios in the middle of any SERVICE procedure. Always use the EXIT function key (F10) to return to the MAIN MENU before disconnecting the radio. Improper exits from service screens may leave the radio in an improperly configured state, resulting in seriously degraded radio or system performance. Refer to your Radio Service Manual for detailed service procedures.
--	--

All service screens read and program the radio codeplug directly. You do NOT have to use GET/SAVE/PROGRAM MENU functions unless you are changing or printing data. You will be prompted at each service screen to save the new values when you exit the screen.

## Function Key Descriptions

**F2 - TX ALIGN**  
(Transmitter Alignment)

Used to perform standard periodic radio transmit alignment procedures. Refer to your Radio Service Manual for Transmit Alignment procedures.

**F3 - RX ALIGN**  
(Receiver Alignment)

*This menu will be valid for Portables only.* Used to perform standard radio receive alignment procedures. Refer to your Radio Service Manual for Receive Alignment procedures.



Caution

Transmitter and Receiver Alignment procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in a seriously degraded radio or system performance. Refer to your Radio Service Manual for detailed service procedures.

**F9 - BOARD INITIALIZATION**

Used to transfer codeplug information from the computer to the radio codeplug. A CBI radio and RIB must be properly connected to the computer and power turned on before you attempt the Board Initialize function.

## Controller Board Initialization

# B I

From the MAIN MENU, press **F2** then **F9** to access the CONTROLLER BOARD INITIALIZATION screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:SERVICE:CBI	Enter Serial Number.								
Controller Board Initialization ----- Serial Number...123ABC1234 Model Number...D04UJH9PW3AN FLASHcode...000000-000000-0									
F1 HELP	F2	F3	F4	F5	F6	F7	F8 PROGRAM RADIO	F9	F10 EXIT

*This screen is only accessible if there is a CBI radio attached to the RIB.*

 Caution	Do not turn off the radio or disconnect it from the computer while attempting to Program the codeplug. Interrupting the programming process will destroy the codeplug contents and completely Disable the radio!
---	--

## Field Definitions

Serial Number

Enter the Serial Number of the Target radio. This number can be found on the outside casing of the radio. You will not be able to initialize the CBI radio unless you enter a proper Serial Number. Once the radio is programmed with this serial number, you will not be able to change it.

Model Number

This is the Model Number of the radio attached to the RIB.

**Note:** This field is read directly from the radio and cannot be edited.

FLASHcode

This is the FLASHcode of the radio attached to the RIB.

**Note:** This field is read directly from the radio and cannot be edited by the user.

## Function Key Descriptions

### F8 - Program Radio

The Program Radio function will initialize a new CBI Controller Board with the serial number entered in the Serial Number field on this screen. The CBI Controller Board must be programmed in this manner to function properly.

**Note:** This function will be disabled if the serial number to be programmed into the new CBI initialized Controller Board is not a proper serial number.

# Transmitter Alignment Menu

## B B

From the MAIN MENU, press **F2** twice to access the TRANSMITTER ALIGNMENT MENU.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:  MAIN:SERVICE:TX ALIGN	Select Function F1 - F10.								
<p>TRANSMITTER ALIGNMENT MENU -----</p> <p>F1 - HELP F2 - Reference Oscillator F3 - Tx Power F4 - Tx Deviation Balance (Compensation) F5 - Tx Deviation Limit F6 - Tx VCO Crossover Frequency F7 - F8 - F9 - F10 - EXIT, Return to Service Menu</p>									
F1 HELP	F2 REF OSC	F3 TX PWR	F4 DEV BAL	F5 DEV LIMIT	F6 TX VCO XOVER	F7	F8	F9	F10 EXIT

### Portables Only

MOTOROLA Radio Service Software ASTRO MOBILE Model:  .MAIN:SERVICE:TX ALIGN	Select Function F1 - F10.								
<p>TRANSMITTER ALIGNMENT MENU -----</p> <p>F1 - HELP F2 - Reference Oscillator F3 - Tx Power F4 - Tx Deviation Balance (Compensation) F5 - Tx Deviation Limit F6 - Tx Current Limit F7 - F8 - F9 - F10 - EXIT, Return to Service Menu</p>									
F1 HELP	F2 REF OSC	F3 TX PWR	F4 DEV BAL	F5 DEV LIMIT	F6 CURRENT LIMIT	F7	F8	F9	F10 EXIT

### Mobiles Only

Standard periodic alignment procedures are performed from this menu. Refer to your Radio Service Manual for alignment procedures.



Caution

These procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.

Signalling deviation for DTMF and high-speed Trunking data should be checked whenever the radio is serviced and must be adjusted when any of the modulation circuitry is replaced. Before adjusting signalling deviation, radio compensation/deviation adjustments must be made. No adjustments are required for DPL, PL, or Trunking connect time deviation.

## Function Key Descriptions

**F2 - REF OSC**  
(Reference Oscillator Alignment)

This is the working value of the Reference Oscillator (Reference Frequency).

**F3 - TX PWR**  
(Transmit Power Alignment)

Refer to your Radio Service Manual for the Transmitter Power Alignment procedure.

**F4 - DEV BAL**  
(Transmit Deviation Balance [Compensation] Alignment)

Refer to your Radio Service Manual for the Transmit Deviation Balance (Compensation) Alignment procedure.

**F5 - DEV LIMIT**  
(Transmit Deviation Limit Alignment)

This is the reference softpot value for this frequency. Refer to your Radio Service Manual for the Transmit Deviation Limit Alignment Reference Attenuator procedure.

**F6 - TX VCO CROSSOVER**  
(Transmit VCO Crossover Frequency)

*This function will be visible for Portable models only.* Refer to your Radio Service Manual for the Tx VCO Crossover Frequency procedure.

**F6 - CURRENT LIMIT**  
(Transmit Deviation Limit Alignment: Reference Softpot)

*This function will be visible for Mobile models only.* Transmit Current Limit Alignment is required after the radio's RF board replacement or service procedure. Refer to your Radio Service Manual for the Transmit Current Limit Alignment procedure.



Caution

Transmitter Alignment procedures should only be attempted by qualified service personnel. Failure to perform alignment procedures properly may result in a seriously degraded radio or system performance. Refer to your Radio Service Manual for detailed service procedures.





## Function Key Descriptions

**F6 - TOGGLE PTT** Alternately keys and de-keys the radio being serviced.

**F8 - PROGRAM VALUE** Programs the selected value into the radio.

## Field Definitions

**New Softpot Value High Pwr** This is the power High for this frequency. The status bar shows the setting in relation to the minimum and maximum settings.

**New Softpot Value Mid Pwr** This is the power Mid for this frequency. The status bar shows the setting in relation to the minimum and maximum settings.

**New Softpot Value Low Pwr** This is the power Low for this frequency. The status bar shows the setting in relation to the minimum and maximum settings.



## Function Key Descriptions

F4 - TOGGLE LOW TONE PTT	Alternately keys and de-keys the radio being serviced with a low frequency audio tone.
F6 - TOGGLE HIGH TONE PTT	Alternately keys and de-keys the radio being serviced with a high frequency audio tone.
F8 - PROGRAM VALUE	Programs the selected value into the radio.

## Field Definition

New Softpot Value	This is the balance value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.
-------------------	--

# Transmit Deviation Limit (*Portables Only*)

## B B E

From the MAIN MENU, press **F2** twice and then **F5** to access the TRANSMIT DEVIATION LIMIT screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows To Adjust Softpot.		
MAIN:SERVICE:TX ALIGN:DEVIATION				
TRANSMIT DEVIATION LIMIT -----				
Frequency	Current Value	New Softpot Value		
-----	-----	-----		
806.0125	54	54		
815.0125	53	53		
824.9875	51	51		
851.0125	55	55		
860.0125	54	54		
869.9875	54	54		
Transmitter..Off				
0		255		
MIN	-----X-----	MAX		
F1 HELP	F2 F3 F4 F5	F6 TOGGLE PTT	F7 F8 PROGRAM VALUE	F9 F10 EXIT

*This screen can be accessed for Portables only. Refer to your Radio Service Manual for the Transmit Deviation Limit Alignment procedure.*

 <b>Caution</b>	<p>This procedure should be attempted only by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.</p>
--	---

Transmit deviation limit alignment is a method of correcting for deviation sensitivity versus RF frequency variations in the VCO. The transmit and receive bands are divided into frequency zones with a calibration point (value) in each zone.

**Note:** Compensation for each of these points must be checked and adjusted if the VCO is replaced.

### Function Key Descriptions

**F6** - TOGGLE PTT

Alternately keys and de-keys the radio being serviced.

**F8** - PROGRAM VALUE

Programs the selected value into the radio.

### Field Definitions

New Softpot Value

This is the VCO softpot value for this frequency. The status bar shows the relationship between this setting and the minimum and maximum settings.



**Note:** This procedure needs to be performed on a single frequency only. All other frequencies will be adjusted automatically.

6. Press **F8** to save the new values.

## Function Key Descriptions

F6 -TOGGLE PTT

Alternately keys and de-keys the radio being serviced.

F8 - PROGRAM VALUE

Programs the selected value into the radio.

## Field Definition

New Softpot Value

This is the Current Limit softpot value for all frequencies. The status bar shows the relationship between this setting and the minimum and maximum settings.

# Receive Alignment Menu (*Portables Only*)

## B C

From the MAIN MENU, press **F2** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:SERVICE:RX ALIGN	Select Function F1 - F10.								
<p>RECEIVER ALIGNMENT MENU -----</p> <p>F1 - HELP F2 - Front End Bandpass Filter F3 - Rx VCO Crossover Frequency F4 - F5 - F6 - F7 - F8 - F9 - F10 - EXIT, Return to Service Menu</p>									
F1 HELP	F2 FRONT END FILT ALGN	F3 RX VCO XOVER	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen is accessible for UHF and VHF Portable models only. Standard periodic receiver alignment procedures are performed from this menu. Refer to your Radio Service Manual for Receive Alignment procedures.*

 Caution	This procedure should be attempted only by qualified service personnel. Failure to perform alignment procedures properly may result in seriously degraded radio or system performance.
---	--

### Function Key Descriptions

**F2 - FRONT END FILT ALIGN**  
(Front-End Filter Alignment)

*This screen is accessible for Portable models only. Brings up the FRONT END FILTER ALIGNMENT screen. Refer to your Radio Service Manual for detailed Front-End Filter Alignment procedures. These procedures should be attempted only by qualified service personnel.*

**F3 - RX VCO XOVER**  
(Receiver VCO Crossover)

*This screen is accessible for Portable models only. Brings up the RECEIVE VCO CROSSOVER screen. Refer to your Radio Service Manual for detailed Receiver VCO Crossover procedures. These procedures should be attempted only by qualified service personnel.*





# Get/Save/Program Menu Functions

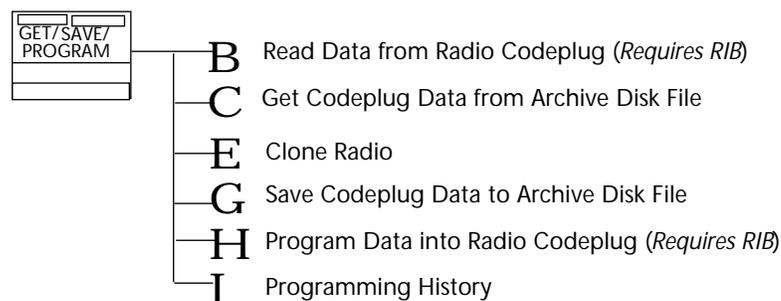
# 4

This section describes all the functions available from the GET/SAVE/PROGRAM MENU. To guide you through these functions, GET/SAVE/PROGRAM-related menus and screens are shown with their respective programming procedures from the MAIN MENU, function key descriptions and field definitions.

**Note:** All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

---

## Menu Map



# Get/Save/Program Menu

C

At the MAIN MENU, press **F3** to bring up this screen.

MOTOROLA Radio Service Software ASTRO Model:	Select Function F1 - F10.								
MAIN:GET/SAVE/PROG									
<p>GET/SAVE/PROGRAM MENU -----</p> <p>F1 - HELP            F2 - Read Data from Radio Codeplug (Requires RIB)            F3 - Get Codeplug Data from Archive Disk File            F4 -            F5 - Clone Radio            F6 -            F7 - Save Codeplug Data to Archive Disk File            F8 - Program Data into Radio Codeplug (Requires RIB)            F9 - Radio Programming History            F10 - EXIT Return to Main Menu</p>									
F1 HELP	F2 READ RADIO	F3 GET ARCHIVE	F4	F5 CLONE RADIO	F6	F7 SAVE ARCHIVE	F8 PROGRAM RADIO	F9 VIEW HISTORY	F10 EXIT

The GET/SAVE functions are used to transfer codeplug data from your radio or an archive file into your computer so that you can change, view, or print the data. GET/SAVE functions also permit you to program modified data back into your radio and save a copy of the codeplug data in an archive file.

 Caution	<p>Do NOT turn off the radio or disconnect it from the computer when the codeplug is being programmed. Interrupting the programming process will destroy the codeplug contents and completely DISABLE the radio!</p>
--	--

## Function Key Descriptions

### F2 - READ RADIO (Read Radio Codeplug)

*A radio and RIB must be properly connected to the computer and power turned on before you attempt the READ function.* Reads the information (data) stored in the radio codeplug (EEPROM) and transfers it to the computer's memory. After the codeplug has been read, data merges, formats, and screen interdependencies will be checked. The status of the READ operation will be displayed at the bottom of the screen.

**Note:** The time required to read a codeplug will depend directly on your computer type and the size of the codeplug being read.

### F3 - GET ARCHIVE

Retrieves an archive file from a diskette or hard disk and loads the data into the computer's memory. Once retrieved, the file may be modified using CHANGE/VIEW functions or programmed into a radio using the **F8 - PROGRAM RADIO** function.

### F5 - CLONE RADIO

Copies codeplug information from one radio to another. *Only radios with the same model number may be cloned.* The CLONE RADIO screen summarizes the individual ID information for both MDC and Trunking so that it can be changed conveniently from the same screen.

**Note:** *Trunked radios may not be cloned unless System Keys have been loaded for each Trunking system ID.*

### F7 - SAVE ARCHIVE

Creates (or updates) an archive copy of the codeplug information onto a diskette or a hard disk. An archive copy of every radio installed or serviced is **STRONGLY** recommended so that you can quickly restore customer information in case of a codeplug failure.

### F8 - PROGRAM RADIO

*A radio and RIB must be properly connected to the computer and power turned on before you attempt this function.* Transfers codeplug information from the computer to the radio codeplug. Before the programming starts, data ranges, formats, and screen interdependencies will be checked. The status of the programming operation will be displayed at the bottom of the screen.

**Note:** The time required to program a codeplug will depend directly on your computer type and the size of the codeplug being programmed.

### F9 - VIEW HISTORY

Provides all the information about the last time the radio was programmed. This includes where and when the radio was programmed and whether or not the programming was authorized.



Caution

If software versions of the radio and the current data are not compatible, read the radio codeplug and enter the data again. Conventional data can be entered from the RSS screens or cloned from another radio.



## Get Codeplug Data From Archive File

CC

From the MAIN MENU, press **F3** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:GET/SAVE/PROG:GET FILE	Press Enter to Select File Name. Press F8 to Load Codeplug File.								
Archive: C:\MRSS\ASTRO\ARCHIVEM ARCHIVE FILES ----- mobcw3.arc mobtw5.arc mobtw7.arc									
F1 HELP	F2 CHANGE ARCHIVE	F3	F4	F5 DELETE SELECTED	F6 CHDIR UP	F7 CHDIR DOWN	F8 GET ARCHIVE	F9	F10 EXIT

The GET ARCHIVE function is used to retrieve an archive file from a diskette or hard disk. Once retrieved, the file may be modified using the CHANGE/VIEW functions or programmed into a radio.

**Note:** The Archive directory will be ARCHIVEM for ASTRO portables, or ARCHIVEM for ASTRO mobiles.

Press **Tab** to select the serial number of the radio to be retrieved. The **F8** function key is used to retrieve the selected file.

## Function Key Descriptions

F2 - CHANGE ARCHIVE

Used to specify the directory path where the archive file is to be saved. The default archive path will always be the default path specified in the SETUP CONFIGURATION MENU (**F9**).

F5 - DELETE SELECTED

Deletes the selected archive file. You will be prompted before the file is actually deleted.

**Note: It is NOT possible to retrieve the file once it has been deleted.**

F6 - CHDIR UP &  
F7 - CHDIR DOWN

Used to navigate up and down the directory tree. The changes to the directory are highlighted on the screen.

F8 - GET ARCHIVE

Used to get the archive file highlighted on the screen. If this function is executed successfully, the RSS will display: "Archive File Read Successfully" in the upper right corner of the screen, and the archive file will be loaded. Only the specified path will be searched.

## Field Definition

Archive

This is the DOS path to the directory where the desired archive file is stored. Refer to the owner's manual that came with your computer for a complete description of DOS path and file names.

# Clone Radio

## C E

From the MAIN MENU, press **F3** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Select Function F1 - F10.				
MAIN:GET/SAVE/PROG:CLONE RADIO									
Serial Number..... NEW TRUNKING IDS -----									
Pers #	System Key	Type	System #	ID	Flt/ATG	Type I Indv ID	II/III Indv ID	Universal ID	
-----	-----	---	---	---	---	-----	-----	-----	
01	Disabled	II	01	0001	000F				
02	Disabled	III	01	0001	0001				
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	READ	CONV	LIMITED		DUPLICATE	SAVE	PROGRAM		EXIT
	SER NUM	ID	CLONE		II/III ID	FILE	RADIO		

The CLONE radio function is used to copy codeplug information from one Trunked radio to another. *Only radios with the same serial number can be cloned.* This screen summarizes the Individual ID information for both MDC and Trunking so that it can be changed conveniently from the same screen.

**Note:** Conventional radios may be cloned completely. *Trunked radios may NOT be cloned unless a System Key has been loaded for each Trunking system ID.*

## Programming Procedure

### Important Notes on Cloning

1. **Do NOT clone a new radio's data into an older radio that has not been upgraded.** New radios usually contain updated firmware which allow them to function with their codeplug data. Such cloning must be performed ONLY AFTER the older radio has been upgraded with new firmware via FLASHport.
2. Cloning is designed to transfer data between a pair or identical radios. **Avoid cloning between radios known to contain non-identical software options** as this may result in an unstable target radio. Unstable codeplug data usually triggers RSS difficulties.
3. If you encounter a "Feature Set Mismatch" message while attempting to clone a radio, this implies that the pair of radios being cloned contain critical non-identical software options. *Cloning is NOT permitted between radios for which different sets of software options have been ordered.*
4. Remember that **cloning results in the target radio's codeplug data being overwritten.** Consequently, cloning radio data containing a one-entry phone list into a radio containing a ten-entry phone list for example will result in an overwrite of the target radio's phone list. In such a scenario, the target radio will end up with only a one-entry phone list after cloning is performed.

## Complete (Full) Cloning

*To perform a full clone, you will need System Keys for all Trunked systems in the radio. Follow the steps below for Full Cloning:*

1. Press **F2** from the GET/SAVE MENU to read the radio codeplug to be cloned, that is, the “source” codeplug. An archive file may be used as the “source” codeplug.
2. Enter the serial number of the radio to be cloned in the Serial Number field, or press **F2** to read the serial number from the connected radio. *System Keys are required to change the serial number.*
3. If required, enter the Trunking IDs for the new (target) radio. *Trunking System Keys (or FTR Keys) are required to clone Trunked radios. If MDC IDs are also used, they can be changed on the MDC ID screen (F3/F5/F3).*
4. Connect the target radio to the computer. Press **F8** to program the source codeplug into the target radio. An archive file for the target radio can also be created using the **F7** key.

## Limited Cloning

A limited clone may be used when all the System Keys required to perform a full clone are not available. *When a limited clone is performed, all Trunking information which existed in the source radio will be deleted or changed to default data. You will have to enter the Trunking information again.* The steps below will guide you in performing a limited clone.

1. Press **F2** while in the GET/SAVE/PROGRAM MENU (**F3**) to read the radio codeplug to be cloned, i.e., the “source” codeplug. An archive file may be used as the “source” codeplug.
2. Press the LIMITED CLONE function key (**F4**) on the CLONE RADIO screen. *At this point, all the Trunking data in the source codeplug will be deleted or set to defaults. This includes all Trunking system and Trunking personality data.* However, Zone/Channel, Conventional, Phone List, Call list and Scan List data will be preserved.



Caution

Do NOT program this image into the original radio unless you want all the Trunking data to be deleted.

3. Enter the serial number of the radio to be cloned or press **F2** to read the serial number from the connected radio. *The F2 function will not be allowed prior to step 2 unless System Keys are present.* At this point, you will have a codeplug image for the target radio, which contains the Conventional data and Radio wide data, from the source radio and no Trunking data. You may operate on the codeplug image in the same fashion as any other codeplug image. It may be archived, edited or programmed into the target radio. Normally you will proceed to step 4.

4. Program the target radio by pressing **F8** from the PROGRAM RADIO screen (**F3/F8**) or from the CLONE RADIO screen (**F3/F5**).
5. Save the target codeplug image to an archive file.

**Note:** A radio and RIB must be properly connected to the computer and power turned on before you attempt the PROGRAM function.

**Note:** The time required to clone a codeplug will depend directly on your computer type and the size of the codeplug being cloned.

## Function Key Descriptions

F2 - READ SER NUMBER (Read serial number)	Allows you to read the serial number/codeplug data of the “target” radio.
F3 - CONV ID (Conventional ID)	Brings up the MDC DATA CLONING screen where you assign MDC IDs. <i>This function will be active only when a Conventional radio is being cloned.</i>
F4 - LIMITED CLONE	This function is used to clone the Conventional and Radio wide sections of the codeplug. <i>It deletes the Trunking data</i> and reads the serial number from the radio. <i>Trunking System Keys (or FTR Key) are required for cloning Trunking system data.</i> Limited Clone requires the target radio to be connected so that the serial number can be read.
F6 - DUPLICATE II/III ID	Duplicates the selected Type II/III ID (the one under the cursor) into all other Trunking Type II/III personalities <i>for which System Keys are present.</i>
F7 - SAVE FILE	Creates or updates an archive copy of the codeplug information onto a diskette or hard disk.  <b>Note:</b> An archive copy of every radio installed or serviced is strongly recommended to be able to quickly restore customer information in case of a codeplug failure.
F8 - PROGRAM RADIO	Transfers codeplug information from the computer to the radio codeplug.

## MDC Data Cloning

# C E C

From the MAIN MENU, press **F3**, **F5** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter Serial Number.								
MAIN:GET/SAVE/PROG:CLONE RADIO									
Serial Number..									
MDC DATA CLONING -----									
Sys #	Primary ID	Secondary ID	Variable ID						
-----	-----	-----	-----						
01	1234	00000000	0000						
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	READ	ASTRO	MODAT						EXIT
	SER NUM	ID							

*The function keys on this screen will vary for Conventional and Trunked ASTRO radios. It is used to copy codeplug information from one Conventional radio to another. Conventional radios may be cloned completely. Trunking radios may be cloned ONLY IF you have a System Key for every Trunking system in the codeplug.*

## Programming Procedure

1. Use the READ SER NUM function to read the radio codeplug to be cloned (the source codeplug). An archive file may also be used as the source codeplug. To use an archive file as the source codeplug, press **F3** on the GET/SAVE/PROGRAM menu to display the GET ARCHIVE screen, highlight the desired archive file and press **F8**.
2. Enter the serial number of the radio to be cloned in the Serial Number field.
3. Change the Conventional IDs to those required for the target radio.
4. Connect the target radio to the computer, press **F2** to read the target radio's serial number, and **F8** to program the source codeplug into the target radio.

**Note:** A radio and RIB must be properly connected to the computer and power turned on before you attempt the READ function.

**Note:** The IDs for MDC-1200, DTMF, etc. MUST be changed manually if you want to have unique IDs. You may do this by accessing the CHANGE/VIEW MENU (**F4**) immediately after cloning each radio.

## Function Key Descriptions (*Conventional Radios only*)

F2 - READ SER NUM	Reads the serial number from the target radio.
F4 - ASTRO ID	Used to edit the unique Individual Radio ID for each ASTRO system.
F5 - MODAT	Used to edit the unique MODAT Individual Radio ID of the radio.

## Function Key Descriptions (*Trunking Radios only*)

F3 - CONV ID	Reads the serial number from the target radio.
F4 - LIMITED CLONE	Clones the Conventional and Radio Wide sections of the codeplug.
F6 - DUPLICATE II/III ID	Copies the selected Type II Individual ID to all other Type II Individual ID fields.

All other function keys are the same for both screens.

# ASTRO ID C E C D

From the MAIN MENU, press **F3**, **F5**, **F3** and then **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CLONE RADIO:CLONE RADIO:ASTRO CLONE	Enter or Scroll to Select Value.									
ASTRO RADIO DATA CLONING ----- <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">Sys #</th> <th style="text-align: left;">Indiv ID</th> <th style="text-align: left;">Talkgroup ID</th> </tr> <tr> <th style="text-align: left;">-----</th> <th style="text-align: left;">-----</th> <th style="text-align: left;">-----</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">01</td> <td style="text-align: left;">00000001</td> <td style="text-align: left;">0001</td> </tr> </tbody> </table>		Sys #	Indiv ID	Talkgroup ID	-----	-----	-----	01	00000001	0001
Sys #	Indiv ID	Talkgroup ID								
-----	-----	-----								
01	00000001	0001								
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT	

**Note:** The Talkgroup ID field is not visible for radios equipped with CAI digital operation.

This screen is used to edit the unique Individual Radio ID for each ASTRO system.

**Note:** You are strongly encouraged to make an archive copy of every radio installed or serviced in order to be able to quickly restore customer information in case of a codeplug failure.

## Field Definitions

Sys #

This field indicates the System Number.

Individual ID

For **VSELP** (Vector Sum Excited Linear Prediction) **Digital Operation** coding:

This field indicates the Individual Radio ID for the ASTRO system. This ID is unique to each radio in the system and is used for both voice and data operation. ID values range from 1 to 16773119. APCO 25 specifies the valid range for Individual IDs to be from 1 to 9999999.

For **CAI Digital Operation**:

This field indicates the Individual ID or the ASTRO system. This ID is used for Selective Calls to a group of radios. The range is from 1 to 9999999.

Talkgroup ID

This field indicates the Talkgroup ID associated with the ASTRO system. This ID is used for Select Calls to a talkgroup as well as partitioning many radios into similar talkgroups. Talkgroup ID values range from 1 to 4094.

# MODAT C E C D

From the MAIN MENU, press **F3**, **F5**, **F3** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ..CLONE RADIO:CLONE RADIO:MODAT CLONE	Enter or Scroll to Select Value.								
MODAT CLONING ----- Modat Unit ID.... 0									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen is used to edit the unique MODAT Individual Radio ID for the radio.

**Note:** You are strongly encouraged to make an archive copy of every radio installed or serviced in order to be able to quickly restore customer information in case of a codeplug failure.

## Field Definitions

Modat Unit ID

This is the four-digit decimal unit ID of the subscriber with the thousands' digit to the left and the ones' digit to the right. The valid range for this ID is 0000 to 8999.

## Saving Codeplug Data to an Archive File

C G

From the MAIN MENU, press **F3** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter Archive Path.								
MAIN:GET/SAVE/PROG:SAVE FILE									
Archive: C:\MRSS\ASTRO\ARCHIVEM  SAVE CODEPLUG DATA TO ARCHIVE FILE ----- Archive Filename.....mobcw3.arc Model Number.....D04UJH9PW3AN Serial Number..... Last Programmed.....9512191947 Program Source.....Factory									
F1 HELP	F2 CHANGE ARCHIVE	F3	F4	F5	F6	F7	F8 SAVE ARCHIVE	F9	F10 EXIT

The SAVE ARCHIVE function is used to create (or update) an archive copy of the codeplug information onto a diskette or hard disk.

**Note:** You are strongly encouraged to make an archive copy of every radio installed or serviced in order to be able to quickly restore customer information in case of a codeplug failure.

## Function Key Descriptions

F2 - CHANGE ARCHIVE

Used to specify the directory path where the archive file is to be located. The default archive path will always be the default path specified in the CONFIGURE PATHS AND PORT screen (**F9/F3**).

F8 - SAVE ARCHIVE

Saves the archive file to the path specified (or to the default path if no path is specified). If you are updating an archive file, the computer will prompt you to press the **F2** key to prevent accidentally overwriting the file.

**Note:** Do NOT press **F8** until you have entered the customer identification information.

## Field Definitions

Archive Filename	Enter the DOS name for the archive file to be saved. The standard DOS file naming convention must be used, i.e., the file name must be a one- to eight- character alphanumeric name appended with an optional one- to three-character alphanumeric extension (xxxxxxx.yyy). The archive file name may be changed if an alternative radio tracking method is to be used.
Model Number	This is the radio model number stored in the codeplug.
Serial Number	This is the radio serial number stored in the codeplug.
Last Programmed	This is the time and date the radio was last programmed.
Program Source	This field describes the source of the most recent codeplug programming:

RSS	Programmed by a standard RSS.
Factory	Programmed at the factory.
Lab	Programmed using the Depot Tool Program.
FTR Key	Programmed using an FTR System Key.



Programming History From the MAIN MENU, press **F3** and then **F9** to access this screen.

# C I

MOTOROLA Radio Service Software ASTRO Model: MAIN:GET/SAVE/PROG:HISTORY	Information Only. These Fields Cannot be Changed.								
PROGRAMMING HISTORY -----									
Model Number.....D04UJH9PW3AN Software Option.....G48 Serial Number.....123ABC1234 Radio Software Version.....00.00 Radio Codeplug Version.....000A Programmed Date.....9512191947 Program Source.....RSS									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

*All the fields on this screen are read-only fields.* This screen shows the historical statistics of the radio, such as serial number, model number, last programmed date, programming source, etc. for reference purposes.

**Note:** The information on this screen is an example of what you screen may look like. The actual numbers will vary according to the current radio model.

## Field Definitions

Model Number	This is the radio model number stored in the codeplug, which should correspond to the model number printed on the label on the back of the radio.
Software Option	<i>This field applies to Private System model numbers only.</i> This field will detail any software options programmed.
Serial Number	This is the radio serial number stored in the codeplug, which should correspond to the serial number printed on the label on the back of the radio.
Radio Software Version	This is the version of operator's software running in the radio.
Radio Codeplug Version	This is the codeplug version number which determines the RSS versions that the codeplug is compatible with.
Programmed Date	This is the time and date the radio was last programmed. The format is YYMMDDHHMM Y=year, M=month, D=day, H=hour, M=minute. Time will be in military format (1:30 PM = 1330).
Program Source	This field describes the source of the most recent codeplug programming:

RSS	Programmed by a standard RSS.
Factory	Programmed at the factory.
Labtool	Programmed using the Depot Tool Program.
FTR Key	Programmed using an FTR (Field Technical Representative) System key.

# Notes

# Change/View Menu Functions

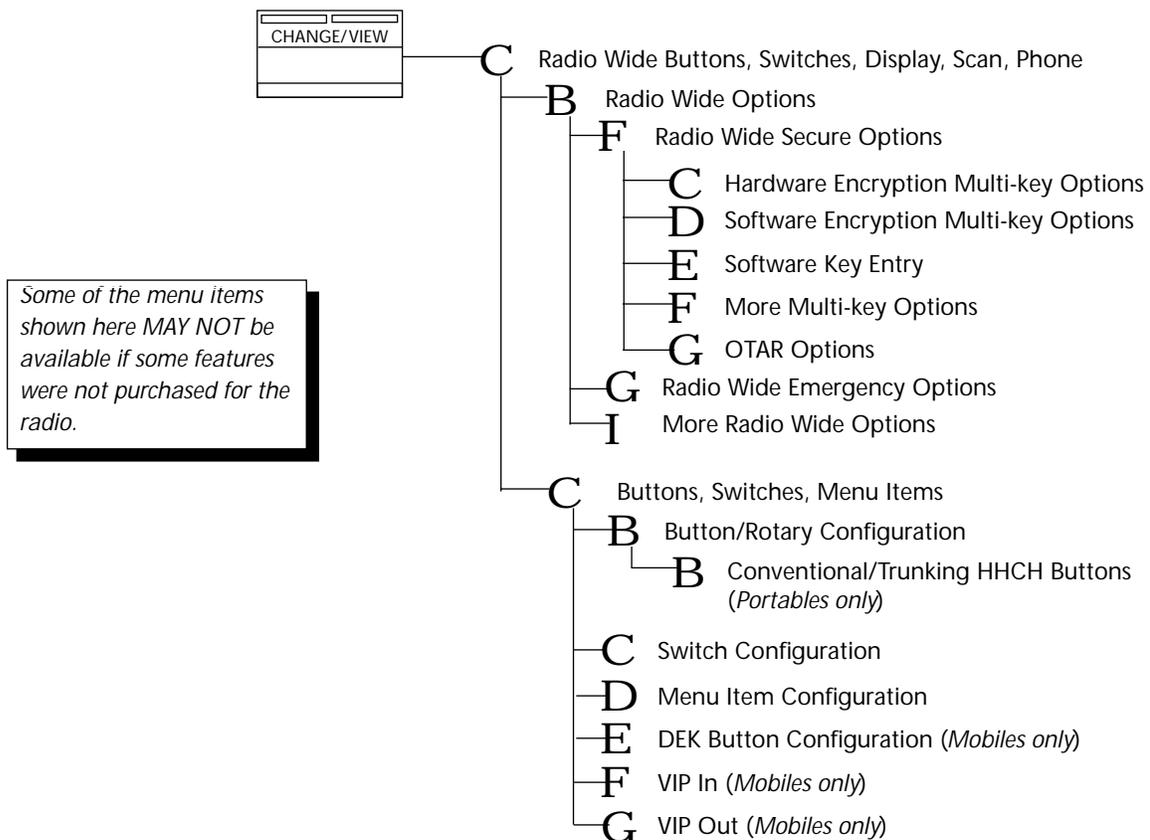


This section describes all the functions available from the CHANGE/VIEW MENU. To guide you through these functions, CHANGE/VIEW-related menus and screens are shown with their respective RSS locations from the MAIN MENU, function key descriptions and field definitions.

**Note:** All functions (supported and unsupported) will be displayed in the menu's working area. The unsupported functions (based on the radio's model or options) will NOT be displayed in the F-key ID area.

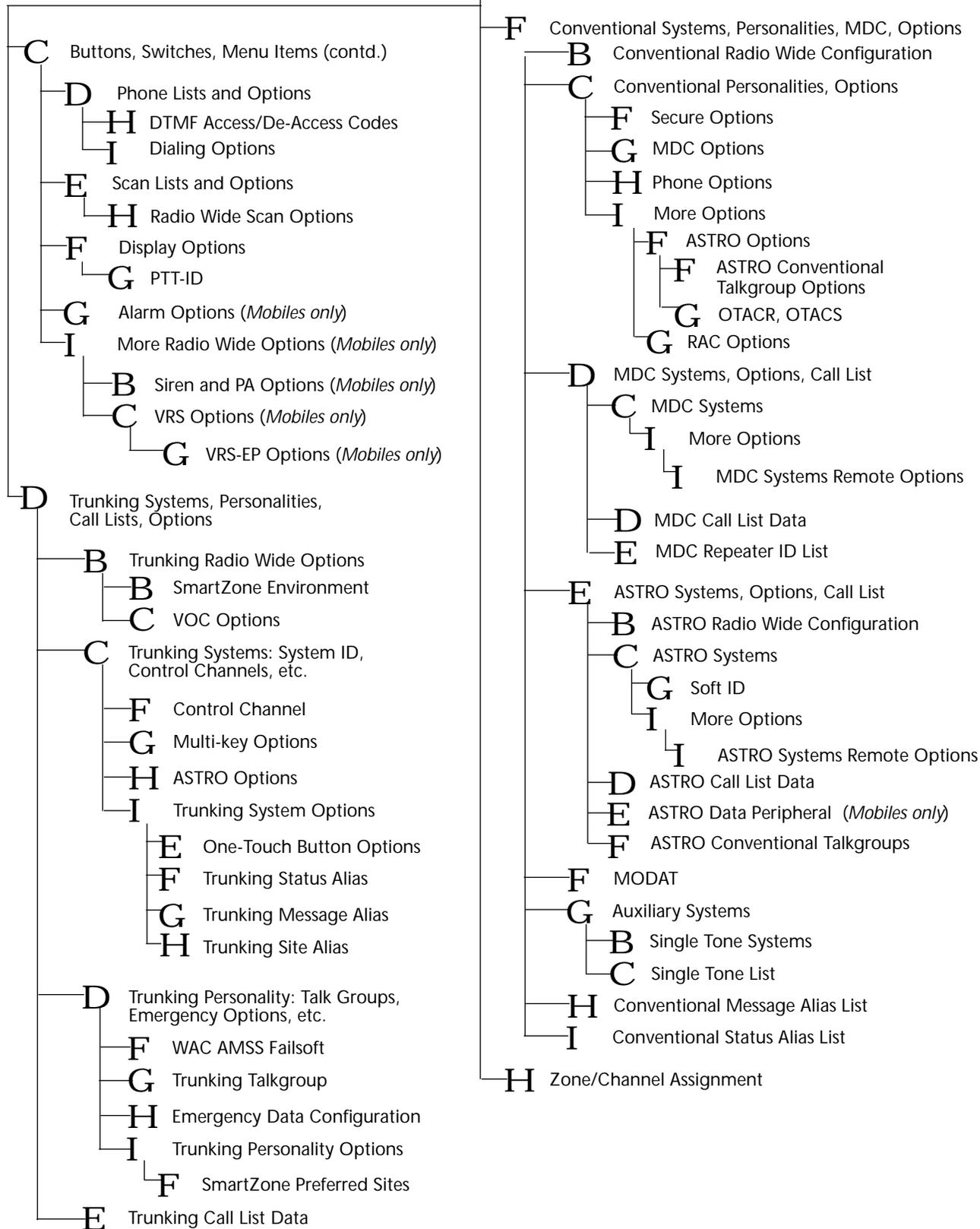
## Menu Map

The menu map is on the following page..



CONTINUED ON THE FOLLOWING PAGE

CHANGE/VIEW



## Change/View Menu

Press **F4** at the MAIN MENU to access the CHANGE/VIEW MENU.

# D

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW	Select Function F1 - F10.								
CHANGE/VIEW MENU -----									
F1 - HELP F2 - F3 - Radio Wide Buttons, Switches, Display, Scan, Phone F4 - Trunking Systems, Personalities, Call Lists, Options F5 - F6 - Conventional Systems, Personalities, MDC, Options F7 - F8 - Zone/Channel Assignment F9 - F10 - EXIT, Return to Main Menu									
F1 HELP	F2	F3 RADIO CONFIG	F4 TRUNK DATA	F5	F6 CONV DATA	F7	F8 ZONE/CHN ASSIGN	F9	F10 EXIT

The CHANGE/VIEW MENU is a multi-level menu. Its sub-menus are used to change or view codeplug features and option configurations. All codeplug parameters are classified as Radio Wide, Conventional or Trunking. The CHANGE/VIEW MENU functions allow you to access each category.

*A codeplug must be loaded into your computer's memory (using GET/SAVE/PROGRAM MENU functions) before you can access the CHANGE/VIEW screens. You may change or view an archive file without having a radio connected. CHANGE/VIEW functions do NOT actually modify the radio's codeplug data. Instead, they modify a copy of the data retrieved from the codeplug or archive file.*

**Note:** *If a specific feature was not purchased with the current radio model, you will NOT be able to access the corresponding data field or screen for that feature. Refer to your Radio Catalog Sheets or Radio Service Manual for radio model descriptions and features.*

**Note:** *If the radio being programmed is "ASTRO READY" (that is, supports analog operation only), you will NOT be able to access ASTRO-related screens and options.*

After all change/view modifications are completed, you MUST return to the GET/SAVE/PROGRAM MENU and program the changes back into the radio or save them to a new archive file. Otherwise, the modifications will be lost when you turn off your computer or load another codeplug into memory.

## Function Key Descriptions

**F3 - RADIO CONFIG**  
(Radio Configuration)

Used to change or view radio parameters and options that affect overall radio operation (including Conventional and Trunking) such as button and volume settings. *Some fields will not be visible if the radio does not support that option.*

**F4 - TRUNK DATA**  
(Trunking Data Configuration)

*This function key will NOT be visible for radio models that support Conventional operation only.* A multi-level menu used to change or view options relating to operations such as personalities, systems, etc.

**F6 - CONV DATA**  
(Conventional Data Configuration)

*This function key will NOT be visible for radio models that support Trunking operation only.* Used to change or view options relating to Conventional operation such as personalities, ASTRO signalling and MDC signalling.

**F8 - ZONE/CHN ASSIGN**  
(Zone/Channel Assignment)

Used to assign a group of channels (or talkgroups) to a particular zone or channel selector based on some common characteristic such as geographic location, job function, signalling type, etc. This screen is also used to define zone partitions and to enter the alphanumeric characters for channel displays.

# Radio Wide Configuration Menu

# DC

From the MAIN MENU, press **F4** and then **F3** to access this menu.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:  MAIN:CHANGE/VIEW:CONFIG	Select Function F1 - F10.								
<p>RADIO WIDE CONFIGURATION MENU -----</p> <p>F1 - HELP F2 - Radio Wide Options F3 - Buttons, Switches, Menu Items F4 - Phone Lists and Options F5 - Scan Lists and Options F6 - Display Options F7 - F8 - F9 - F10 - EXIT, Return to Change/View Menu</p>									
F1 HELP	F2 RADIO OPTIONS	F3 FEATURE OPTIONS	F4 PHON.TX OPTIONS	F5 SCAN OPTIONS	F6 DISPLAY OPTIONS	F7	F8	F9	F10 EXIT

### Portables Only

MOTOROLA Radio Service Software ASTRO MOBILE Model:  MAIN:CHANGE/VIEW:CONFIG	Select Function F1 - F10.								
<p>RADIO WIDE CONFIGURATION MENU -----</p> <p>F1 - HELP F2 - Radio Wide Options F3 - Buttons, Switches, Menu Items F4 - Phone Lists and Options F5 - Scan Lists and Options F6 - Display Options F7 - Alarm Options F8 - F9 - More Options F10 - EXIT, Return to Change/View Menu</p>									
F1 HELP	F2 RADIO OPTIONS	F3 FEATURE OPTIONS	F4 PHON.TX OPTIONS	F5 SCAN OPTIONS	F6 DISPLAY OPTIONS	F7 ALARM OPTIONS	F8	F9 MORE OPTIONS	F10 EXIT

### Mobiles Only

The RADIO WIDE CONFIGURATION MENU can be used to access settings for features, parameters and options that affect both Trunking and Conventional operation. Typically, when you start editing a codeplug, you should access this menu and configure the Radio wide configuration options first by working your way through the sub-menus of this menu. This will allow the options on other screens to reflect Radio wide options.

**Note:** Some fields will not be visible if the radio does not support the options or features that they pertain to.

## Function Key Descriptions

- F2 - RADIO OPTIONS** Brings up a menu through the sub-menus of which you can edit general options that affect operation of the radio as a whole such as Alert Tones, Silent Emergency and Time-Out Timer (TOT) values. *The options on this screen should be correctly edited and verified before you proceed to edit personality data.*
- F3 - FEATURE OPTIONS** Brings up a screen where you can define the function that each button, switch, and menu item performs.
- F4 - PHON. TX OPTIONS** *This screen will be visible only if the radio supports this option.* Brings up a screen where you can edit phone interconnect configuration for the radio, including stored phone numbers and aliases. These parameters are radio wide and affect both Conventional and Trunking operation.
- F5 - SCAN OPTIONS** Brings up a screen where you can enter the Scan Lists for each personality and select the type of scan. If a given scan list number is chosen on the appropriate PERSONALITY screens, it may be used for either Conventional or Trunking operation as the case may be.
- F6 - DISPLAY OPTIONS** *This function will be visible only for radios that have a display.* Brings up a screen where you can edit display information for the radio to customize it to specific user applications. You will be able to configure how Zone and Channel names will be displayed and modify other display timing options. The features and options displayed here are applicable to all systems and personalities.
- F7 - ALARM OPTIONS** *This function will be visible for Mobiles only.* Brings up a screen where you can configure how the radio's Horn & Light alarms behave.
- F9 - MORE OPTIONS** *This function will be visible only if the additional options are supported by the current radio model.* Brings up a screen where you can enable additional radio wide options and access the corresponding option configuration screen.

# Radio Wide Options

From the MAIN MENU, press **F4**, **F3** and then **F2** to access this screen.

## D C B

MOTOROLA Radio Service Software ASTRO PORTABLE Model:					Use UP/DOWN Arrows to Select Choice.					
MAIN:CHANGE/VIEW:CONFIG:RADIO OPTIONS										
RADIO WIDE OPTIONS -----										
Minimum Volume.....75	Alert Tones.....Enabled	Alert Tone Volume Offset(db)...0	Self Test Alert Tone....Disabled	Low Battery	Tx Chirp.....Enabled	Standby Chirp (sec).....60	LED.....Enabled	Out Of Range.....No Indication	Zero Level Audio Mute....Disabled	Block Pending CA/PC.....Disabled
									Rotary Switch (Scan Prgm).Channel	Mute Tones Operation.Keypad Tones
									Short Keypress Duration (ms)...50	Long Keypress Duration (ms)...1000
									Maximum Channels (Talkgroups).255	
									Home Mode Selection.....Enabled	Zone.....None Channel.....1
									Secure Hardware Equipped..... Yes	
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	
HELP					SECURE	EMERG		MORE	EXIT	
					OPTIONS	OPTIONS		OPTIONS		

### Portables Only

MOTOROLA Radio Service Software ASTRO MOBILE Model:					Use UP/DOWN Arrows to Select Choice.					
MAIN:CHANGE/VIEW:CONFIG:RADIO OPTIONS										
RADIO WIDE OPTIONS -----										
Alert Tones.....Enabled	Min Alert Tone Volume.....128	Self Test Alert Tone....Disabled							Block Pending CA/PC.....Disabled	
									Selectable Keypad Mute....Enabled	Short Keypress Duration (ms)...50
									Long Keypress Duration (ms)...1000	Maximum Channels (Talkgroups).255
									Home Mode Selection.....Enabled	Zone.....None Channel.....1
									Secure Hardware Equipped.....Yes	
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	
HELP					SECURE	EMERG		MORE	EXIT	
					OPTIONS	OPTIONS		OPTIONS		

### Mobiles Only

This screen allows you to set up various options that affect Radio wide operation. *The options on this screen should be correctly edited and verified before you proceed to edit personality data.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

### F6 - SECURE OPTIONS

*This option will be active only if the current radio is capable of Secure operation and the Secure Hardware Equipped field on this screen is set to Yes.* Brings up a screen where you can modify Radio wide Secure option settings.

### F7 - EMER OPTIONS (Emergency Options)

*This option will be visible only if the current radio codeplug supports Emergency features.* Brings up a screen where you can edit Radio wide Emergency feature options such as alarms and delays.

### F9 - MORE OPTIONS

Brings up a screen where you can view and modify additional Radio wide options.

## Field Definitions

### Minimum Volume

*This field will be visible for Portables only.* Use the UP/DOWN arrow keys to select the desired volume level. This is the minimum volume level the radio will use. If the radio's physical volume setting is above the desired level you specify in this field, the actual physical volume setting will be used. Otherwise, the minimum volume you specify here will be used. Valid entries range from 0 (zero) to 255.

### Alert Tones

Use the UP/DOWN arrow keys to enable/disable the radio's Alert Tones.

### Alert Tone Vol Offset (db)

*This field will be visible for Portables only, and only when the Alert Tones field is set to Enabled.* Use the UP/DOWN arrow keys to select the Alert Tone Volume Offset that the radio will use. This is the value by which the alert tone volume will be raised or lowered with reference to the current user-selected volume. This offset can range from -26 dB to +25 dB in 1-dB increments.

### Self Test Alert Tone

*This field will be visible only and if the Alert Tones field is set to Enabled.* Use the UP/DOWN arrow keys to enable/disable the Power-Up Self Test Alert Tone. If this feature is enabled, an alert tone will sound each time the radio is turned on and self-test is completed.

### Min Alert Tone Volume

*This field will be visible for Mobiles only, and only when the Alert Tones field is set to Enabled.* Use the UP/DOWN arrow keys to select the desired volume level. This is the minimum alert tone volume level the radio will use. If the volume setting is above the level you specify, the actual volume setting will be used to sound an alarm. Otherwise, the Minimum Alert Tone Volume you specify here will be used. Valid entries range from 0 (zero) to 255.

### Low Battery Tx Chirp

*This field will be visible for Portables only.* Use the UP/DOWN arrow keys to enable/disable this Low Battery alert tone. If this field has been set to Enabled and a low battery condition is detected during transmit, the radio will sound a beep immediately after the PTT button is released.

Low Battery Standby Chirp (sec) *This field will be visible for Portables only.* Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. This is the length of time between successive low battery alert chirps. Valid entries range from 30 to 930 seconds in 30-second increments. A setting of Disabled (that is, the radio will not sound alarms when it is idle, but the alarm will still sound at the end of each transmission if the Low Battery Tx Chirp field is enabled.)

Low Battery LED *This field will be visible for Portables only.* Use the UP/DOWN arrow keys to enable/disable this feature. If this field is enabled, a red Tx LED will flash when a low battery condition is detected while the radio is transmitting.

Rotary Alert *This field will be visible for Continuous Rotary Control Mobile models only.* Use the UP/DOWN arrow keys to select the type of Continuous Rotary Alert from among the following:

Rollover Alert	Turning the Rotary control past all programmed channels in either direction will cause an alert tone (beep).
Elec. Stop	Turning the Rotary control past the first channel position in either direction will cause an alert tone.
None	Turning the Rotary control will cause no alert tones.

Out of Range Use the UP/DOWN arrow keys to select the desired type of Out of Range indication. This field determines how the radio will indicate an Out of Range condition *on a Trunked system*. When the radio can no longer communicate with the base station, it can be programmed to sound an out-of-range alert tone, display an out-of-range message, or both. To disable this feature, set the field to No Indication.

Zero Level Audio Mute *This field will be visible for Portables only.* Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the user can mute all radio speaker activity by simply rotating the volume control knob to a point less than the radio's Minimum Volume setting.

**Note:** The Minimum Volume level is adjustable and can be adjusted via the Minimum Volume level field.

Block Pending CA/PC Use the UP/DOWN arrow keys to enable/disable blocking of Pending Call Alerts or Private Calls. When this feature is enabled, the radio will ignore all successive Call Alerts (or Private Calls) after receiving a Call Alert (or Private Call) with a different ID than the one which originated the pending call.

Rotary Switch (Scan Prgm) *This field will be visible for Portables only.* Use the UP/DOWN arrow keys to define the operation of the Channel Rotary during scan programming when BOTH Zone and Channel selection are from the radio menu (that is, the rotary is not used). The rotary can be used to step through either channels or zones during scan programming. *This feature is applicable ONLY when both the Zone and Channel selections are made from the radio menu.*

Mute Tones Operation	<i>This field will be visible for Portables only.</i> Use the UP/DOWN arrow keys to enable/disable Mute Tones Operation. When this field is enabled, the user will be able to mute the keypad chirps from the radio menu. <i>For this feature to work properly, a mute selection must also be made for the desired button on the MENU ITEM LIST CONFIGURATION screen (F4/F3/F3/F4).</i>
Selectable Keypad Mute	<i>This field will be visible for Mobiles only.</i> Use the UP/DOWN arrow keys to enable/disable this option. If this field is enabled, the radio user will be able to selectively mute keypad chirps from the radio menu.
Short Keypress Duration (ms)	Use the UP/DOWN arrow keys to change the timing duration for a Short Keypad Keypress or enter the desired value directly. This determines the amount of time that a key must be pressed to be considered a valid short keypress. An example of a Short Keypress would be pressing a digit on the keypad when entering a Private Call ID. Valid entries range from 50 to 750 ms in 50-ms increments.
Long Keypress Duration (ms)	Use the UP/DOWN arrow keys to change the timing duration for a Long Keypad Keypress. A long keypress involves pressing and holding a key for a period of time to enable a specific radio function or feature. This means that the user must press and hold the key down for the time duration specified in this field in order to activate a radio function. Valid entries range from 0 (zero) to 3750 ms in 250-ms increments.
Maximum Channels (Talkgroups)	<i>This is a view-only field.</i> It indicates the maximum number of channels/talkgroups that a radio can access. <i>This value varies depending on the model number and options purchased for the current radio.</i>
Home Mode Selection	Use the UP/DOWN arrow keys to enable/disable Home Mode Selection. If this field is enabled, the radio will “home” to the Zone/Channel specified in the Zone and Channel fields on this screen when the radio user presses the HOME button.
Zone	<i>This field will be visible only when Home Mode Selection is enabled.</i> Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. This option allows you to specify a particular zone to whose “home channel” the radio will “home” when the user presses the HOME button. The valid range of values is 1 to 50 and “None”.  <b>Note:</b> When this field is set to “None”, the radio will remain on the current zone, but will “home” to the home channel selected in the Channel field.
Channel	<i>This field will be visible only when Home Mode Selection field on this screen is set to Enabled.</i> Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. This option allows you to specify a particular channel to which the radio will “home” when the radio user presses the radio’s HOME button. The valid range of values is 1 to 255.  <b>Note:</b> The RSS will display “???” if the current channel selection triggers an invalid channel condition. If this occurs, select a valid channel.

## Secure Hardware Equipped

*This field will not be visible unless a Secure-capable radio has been read. Set this field to “Yes” ONLY if the current radio is capable of Secure operation and you would like to enable Secure operation. If not, set this field to “No”. Setting this field to “Yes” will allow you to access the RADIO WIDE SECURE OPTIONS screen (F4/F3/F2/F6).*

**Note:** It may take a few seconds for the function key option to be displayed in the screen’s function key ID area.



Caution

Before setting this field to “Yes”, make sure that the current radio is equipped with Secure hardware. If you set this field to “Yes” and the radio is NOT Secure-equipped, the radio may not function properly.

# Radio Wide Secure Options

## D C B F

From the MAIN MENU, press **F4**, **F3**, **F2** and **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
..CONFIG:RADIO OPTIONS:SECURE OPTIONS									
<p>RADIO WIDE SECURE OPTIONS</p> <p>-----</p> <p>Ignore Sec/Clr Switch When Strapped...No          XL Encryption.....Yes          Tx Clear Alert Tones..... Enabled          Periodic Keyfail Alert Tone.....Enabled          Non-XL Scan Unsquelch Duration (ms)..275          XL Scan Unsquelch Duration (ms).....875          Auto Login.....Disabled          Infinite Key Retention.....Disabled          OTAR.....Enabled          Proper Code Enhancer.....Enabled</p>									
F1 HELP	F2	F3 HW ENC	F4 SW ENC	F5 SW KEY	F6 MORE	F7 OTAR	F8	F9	F10 EXIT
MULTIKEY MULTIKEY ENTRY MULTIKEY OPTIONS									

*This screen can be accessed only if the current radio is Secure-equipped and the Secure Equipped field on the RADIO WIDE OPTIONS screen (F4/F3/F2) is set to "Yes". This screen allows you to set up various Secure options that affect Radio wide operation.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F3 - HW ENC MULTIKEY**  
(Hardware Encryption Multikey Options)

Brings up a screen where you can edit the number and type of hardware keys.

**F4 - SW ENC MULTIKEY**  
(Software Encryption Multikey Options)

Brings up a screen where you can edit the number and type of software keys.

**F5 - SW KEY ENTRY**  
(Software Key Entry)

Brings up a screen where you can edit the software key logical IDs.

**F6 - MORE MULTIKEY**

Brings up a screen where you can edit multikey parameters.

**F7 - OTAR OPTIONS**  
(Over-The-Air Re-keying Feature Options)

*This function will be visible only if the OTAR field on this screen is set to Enabled. Brings up a screen where you can enable/disable the radio's Over-The-Air Re-keying feature.*

## Field Definitions

Ignore Sec/Clr Switch When Strapped

Ignore Sec/Clr Switch When Strapped is only displayed for radios equipped with CAI Digital Operation.

If this parameter is set to Yes and the active radio mode is strapped to Secure or Clear, the radio ignores the position of the Secure/Clear Switch and allows user-initiated voice transmissions based upon the mode's strapping. In this configuration the Secure/Clear Switch has no effect.

If this parameter is set to No and the active radio mode is strapped to Secure or Clear, the radio checks the position of the Secure/Clear Switch against the active mode's strapping. If the strapped value does not match the position of the switch, the radio will not transmit.

The factory default is No.

XL Encryption

Use the UP/DOWN arrow keys to specify whether or not an XL chip is present in the current radio. *This field should be set to "Yes" if the radio is equipped with an XL chip.* It may take a few seconds for the screen to update.

**Note:** *The XL Scan Unsquelch Duration field on this screen will be visible only if the XL Encryption field is set to "Yes".*

Tx Clear Alert Tones

Use the UP/DOWN arrow keys to enable/disable Tx Clear Alert Tones for the radio. When this field is set to Enabled, an alert tone will be generated every time the user keys up the radio in the Clear mode.

Periodic Keyfail Alert Tone

Use the UP/DOWN arrow keys to enable/disable Periodic Keyfail Alert Tones for the radio. When this field is set to Enabled, a periodic alert tone will be generated whenever the radio has lost key and one of the following conditions is met:

- Secure/Clear Strapping is set to Secure; or
- Secure/Clear Strapping is set to Select and Secure operation has been selected.

Non-XL Scan Unsquelch Duration (ms)

Use the UP/DOWN arrow keys to select the Non-XL Scan Unsquelch Duration. This determines the period of time that the radio will wait for a Non-XL (Cipher Feedback) encrypted signal to be detected following a Carrier Detect when it scans for coded transmissions. When the Scan Select field in the PERSONALITY screen is set to Non-XL, the radio will scan for the duration specified in this field. The valid range is 0 (zero) to 6375 ms in 25-ms increments.

XL Scan Unsquelch Duration (ms)

*This field will be visible only if the XL Encryption field on this screen is set to "Yes".* Use the UP/DOWN arrow keys to select the XL Scan Unsquelch Duration. This field determines the period of time the radio will wait for a Non-XL (Cipher Feedback) or XL encrypted signal to be detected following a Carrier Detect when scanning for coded transmissions. If the Scan Select field in the PERSONALITY screen is set to Non-XL&XL, the radio will scan for the duration specified in this field. The range is 0 (zero) to 6375 in 25-ms increments.

Auto Login	<p>Use the UP/DOWN arrow keys to enable or disable the radio's Auto Login feature. <i>This feature is a sub-feature of the radio lock feature and will operate only when Radio Lock is enabled.</i> If Auto Login is enabled, the radio will NOT prompt the user to enter the password on power-up. It will use the previously entered password to unlock the radio.</p> <p><b>Note:</b> The password should have been entered at least once when the Radio Lock feature is enabled.</p>
Infinite Key Retention	<p>Use the UP/DOWN arrow keys to enable/disable this feature. If this field is set to Enabled, the encryption keys in the radio will be retained whenever the battery is removed or the radio is re-programmed. If this field is set to Disabled, the encryption keys will be erased whenever the battery is removed or the radio is re-programmed.</p>
OTAR	<p>Use the UP/DOWN arrow keys to enable/disable the Over-The-Air-Rekeying (OTAR) feature. Make sure that OTAR Tx is enabled in the SECURE OPTIONS screen (<b>F4/F6/F3/F6</b>) for each channel where OTAR operation is desired.</p> <p><b>Note:</b> <i>The OTAR OPTIONS screen (F4/F3/F2/F6/F7) can be accessed only if this field is set to Enabled.</i></p>
Proper Code Enhancer	<p>Use the UP/DOWN arrow keys to enable/disable this feature. When this field is set to Enabled, the radio will provide optimal and consistent proper code detect operation in the receiving radios. If this field is set to Disabled, proper code detect times may be quite long for radios which are receiving transmissions in a noisy environment.</p>

# Hardware Encryption Multikey Options

**D C B F C**

From the MAIN MENU, press **F4**, **F3**, **F2**, **F6** and **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...SECURE OPTIONS:HW MULTIKEYS				Enter the Number of User Selectable Encryption Keys.						
HARDWARE ENCRYPTION MULTIKEY ----- Number of User Selectable Hardware Keys.....1										
Key #	HW Key Name	Indxd	HW Slot	Key #	HW Key Name	Indxd	HW Slot			
-----	-----	-----	-----	-----	-----	-----	-----			
1	HwKey1	N	0							
F1 HELP		F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows you to select the number of hardware keys used by the radio operator, enter hardware key names, and determine whether a key can be indexed or not. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Number of User Selectable Hardware Keys

Enter the number of User Selectable Hardware Keys directly. This feature allows you to specify the number of Hardware Encryption keys that can be selected through the radio's key selection menu. The valid range is 1 to 16.

Key #

*This is a view-only field.* It shows the number assigned by the system to the current key.

Hardware Key Name

Enter the name for the Hardware Key directly. This feature allows you to enter a Hardware Encryption Key Name to identify a specific key in the radio. If no key name is entered, the default name "HwKey1" will be used.

**Note:** The maximum number of characters allowed is automatically adjusted based on the current radio model and display type.

Indexed	Use the UP/DOWN arrow keys to make your selection, or enter Y(es) to enable indexing and N(o) to disable indexing. If indexing is enabled, you can map a specified encryption key to two different indexes. You can then switch indexes to change the channel to which the key is slaved. Any key slaved to a channel will now use the corresponding key from the new index. Keys may be indexed until the maximum number of available slots are used.
Hardware Slot	<i>This is a view-only field.</i> If the Indexed column is set to Y(es), this field displays the number assigned by the system to this hardware slot.

# Software EncryptionMultikey Options

D C B F D

From the MAIN MENU, press **F4**, **F3**, **F2**, **F6** and **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...SECURE OPTIONS:SW MULTIKEYS	Enter the Number of User Selectable Encryption Keys.																
SOFTWARE ENCRYPTION MULTIKEY ----- Number of User Selectable Software Keys.....1																	
<table border="1"> <thead> <tr> <th>Key #</th> <th>SW Key Name</th> <th>Indxd</th> <th>SW Slot</th> <th>Key #</th> <th>SW Key Name</th> <th>Indxd</th> <th>SW Slot</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SwKey1</td> <td>N</td> <td>0</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Key #	SW Key Name	Indxd	SW Slot	Key #	SW Key Name	Indxd	SW Slot	1	SwKey1	N	0				
Key #	SW Key Name	Indxd	SW Slot	Key #	SW Key Name	Indxd	SW Slot										
1	SwKey1	N	0														
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT								

This feature allows you to specify the number of Software Keys that can be used by the radio user, enter software key names, and determine whether a software key can be indexed or not. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Number of User Selectable Software Keys

Enter the number of User Selectable Software Keys directly. This feature allows you to specify the number of Software Encryption keys that can be selected through the radio's key selection menu.

Key # (Key Number)

*This is a view-only field.* It shows the number assigned by the system to this software slot.

SW Key Name (Software Key Name)

Enter the name for the Software Key directly. This feature allows you to enter a Software Encryption Key Name to identify a specific key in the radio. If no key name is entered, the default name "SwKey1" will be used.

**Note:** The maximum number of characters allowed will depend on the radio model and display type.

Indxd (Indexed)

Use the UP/DOWN arrow keys to make your selection or enter Y(es) to enable indexing or N(o) to disable indexing. If indexing is enabled, you can map a specified encryption key to two different indexes. You can then switch indexes in order to change the channel to which the key is slaved. Any key slaved to a channel will now use the corresponding key from the new index. Keys may be indexed until the maximum number of available slots are used.

SW Slot (Software Slot)

*This is a view-only field.* If the Indexed column is set to Y(es), this field will display the number assigned by the system to this software slot.

## Software Key Entry Menu

### D C B F E

From the MAIN MENU, press **F4**, **F3**, **F2**, **F6** and **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...SECURE OPTIONS:KEY ENTRY	Enter or Scroll to Select Choice.								
SOFTWARE KEY ENTRY MENU ----- User Selectable Software Key Erase Allowed.....Y									
SW Slot	Key LIDs	Key Variables	SW Slot	Key LIDs	Key Variables				
-----	-----	-----	-----	-----	-----				
0	0	*****							
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows you to enter Software Key Logical IDs (LIDs) as well as software encryption keys. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

User Selectable Software Key Erase Allowed

Enter [Y]es to enable User Selectable Software Key Erase feature or [N]o to disabled the User Selectable Software Key Erase feature from the keyboard. If this field is set to Yes, the user will be able to erase Software Encryption keys from the radio's key selection menu.

Software Slot

*This is a view-only field.* It shows the number assigned by the system to this software slot.

Key LIDs

Enter the Logical ID of up to four hexadecimal digits. This field allows you to enter a Software Encryption Key Logical ID (LID). The LID is a 16-bit key variable identifier. The LID of the key variable being used is sent out with the encrypted message so that the receiver can determine which key to use when decoding that message.

**Note:** All LIDs must be unique. The only exception is LID = \$0000.

Key Variables

Enter a Key Variable of up to six hexadecimal digits. This field allows you to enter a Software Encryption Key variable. The Software Encryption Key Variable is a 24-bit key variable used in encrypting voice traffic between software encryption-equipped radios.

**Note:** For security purposes, a key variable CANNOT be recalled to the display once it has been entered.

## More Multikey Parameters

# D C B F F

From the MAIN MENU, press **F4**, **F3**, **F2** and **F6** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...SECURE OPTIONS:MORE MK	Use UP/DOWN Arrows to Select Function.								
<p>MORE MUTLIKEY PARAMETERS -----</p> <p>Display on Secure Switch Select.....Key Name            Display on PTT.....Key Name            Display on Mode Change.....Key Name</p> <p>Key ID Receive HangTime (ms).....3000            Key ID Transmit HangTime (ms).....3000</p> <p>Index Name for Index 1.....Index 1            Index Name for Index 2.....Index 2            Index User Selectable.....Disabled            Erase Previous Index on User Change.....Disabled</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows you to enter index names to determine what information is to be displayed on Transmit Secure Switch Select, PTT, or Mode Change. It also sets timers for Key ID Tx/Rx Hangtime, to enable/disable User Selectable Indexing and Erase Previous Index On User Change. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Display On Secure Switch Select

Use the UP/DOWN arrow keys to select what will be displayed when the Secure Select Switch is in coded position. Whenever the Transmit Mode Selector Switch is in the secure/coded position (that is, the user changes to a secure mode of operation), you can choose to display either the Index Name or the Key Name. If this field is set to Neither, nothing will be displayed.

Display on PTT

Use the UP/DOWN arrow keys to select what will be displayed when the PTT button is pressed. Whenever the PTT button is pressed, you can choose to display either the Index Name or the Key Name. If this field is set to Neither, nothing will be displayed.

Display on Mode Change

Use the UP/DOWN arrow keys to select what will be displayed when the Mode Change switch is changed to a secure channel. Whenever the user changes mode to a secure channel, you can choose to display either the Index Name or the Key Name. If this field is set to Neither, nothing will be displayed.

Key ID Receive HangTime (ms)

Use the UP/DOWN arrow keys to scroll through the Receive Key ID Hangtime values or enter a value directly. This timer determines how long the radio should wait after losing code detect before it reloads the last user-selected or slaved encryption key. The hangtime can be set from 0 to 10000 ms (10 seconds) in 250-ms increments.

Key ID Transmit HangTime (ms)	Use the UP/DOWN arrow keys to scroll through the Transmit Key ID Hangtime options or enter a value directly. This is the length of time that the radio will wait after a coded transmission before reloading the last user-selected or slaved encryption key. The hangtime can be set from 0 to 10000 ms (10 seconds) in 250-ms increments.
Index Name for Index 1	Enter an index name directly of up to 14 characters. If no index name is entered, the default name "Index 1" will be used. <i>The actual maximum will depend on the radio model.</i>
Index Name for Index 2	Enter an index name directly of up to 14 characters. If no index name is entered, the default name "Index 2" will be used. <i>The actual maximum will depend on the radio model.</i>
Index User Selectable	Use the UP/DOWN arrow keys to enable/disable the User Selectable Indexing feature for the radio. If this option is enabled, the user can change the current index through the radio's Softkey menu.
Erase Previous Index on User Change	Use the UP/DOWN arrow keys to enable/disable the Erase Previous Index On User Change feature for the radio. If this feature is enabled, all encryption keys will be erased from the previous index when the current index is selected.

# OTAR Options

## D C B F G

From the MAIN MENU, press **F4**, **F3**, **F2**, **F6** and **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...SECURE OPTIONS:OTAR OPTIONS	Use UP/DOWN Arrows to Select Choice.								
OTAR OPTIONS -----									
Generate Key-Loss-Key.....Enabled OTAR Ack.....Enabled Encrypted OTAR Only Ack.....Disabled Power-Up OTAR Ack.....Disabled User Selectable Rekey Request.....Disabled Rekey Request Status Alert Tone.....Enabled Erase Prev Index on Index Change.....Disabled Radio Inhibit via OTAR.....Enabled KMC ID.....1234 MDC System #.....1 Remote Monitor via OTAR.....Enabled Remote Keyup Time Constant (sec).....10									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### Portables Only

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...SECURE OPTIONS:OTAR OPTIONS	Use UP/DOWN Arrows to Select Choice.								
OTAR OPTIONS -----									
Generate Key-Loss-Key.....Enabled OTAR Ack.....Enabled Encrypted OTAR Only Ack.....Disabled Power-Up OTAR Ack.....Disabled User Selectable Rekey Request.....Disabled Rekey Request Status Alert Tone.....Disabled Erase Prev Index on Index Change.....Disabled Radio Inhibit via OTAR.....Enabled KMC ID.....1234 MDC System #.....1									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### Mobiles Only

This screen allows the user to set up all Over-The-Air Rekeying (OTAR) options that affect radio wide operation. *Some of the options selected may have to be set up at the Key Management Controller (KMC) site if they are to work properly.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### Generate Key-Loss-Key

Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the radio will be able to generate a Key-Loss-Key signal from a Unique Shadow Key allowing the radio to be re-keyed via the Over-The-Air Rekeying (OTAR) feature. When this feature is disabled and the radio has lost all of its keys, the radio cannot be rekeyed via the OTAR feature.

### OTAR Ack

Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the radio will acknowledge all OTAR messages that request an acknowledgment. When this feature is disabled, the radio will not acknowledge OTAR messages that require acknowledgment, except for Rekey Requests initiated via the radio's Rekey Request menu.

**Note:** When this field is set to Disabled, you *MUST* ensure that all Stat-Alert features are also disabled. This is to prevent undesired compromise of security. Stat-Alert features include Radio Check, Remote Monitor, Auto Selective Call Transmit, Call Alert Decode and Selective Call Decode.

**Note:** The OTAR Ack feature is independent of the Power-Up Ack feature.

### Encrypted Only OTAR Ack

Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the radio will encrypt all OTAR acknowledgments that it sends. When this feature is disabled, the radio will send encrypted or clear acknowledgments as directed by the Key Management Controller (KMC).

### Power-Up OTAR Ack

Use the UP/DOWN arrow keys to enable/disable the Power-Up Ack feature. When this feature is enabled (that is, set to Immediate or Delayed), the radio will send an Over-The-Air-Rekeying (OTAR) acknowledgment after it is switched on. Select one of the following:

Disabled	No acknowledgment sent from radio when it is powered up.
Immediate	Acknowledgment is sent from radio immediately after it is powered up.
Delayed	Acknowledgment is sent from the radio with the first press of the Push-To-Talk button after the radio is powered up.

**Note:** The Power-Up Ack feature is independent of the OTAR Ack feature.

### User Selectable Rekey Request

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the user will be able to send a Rekey Request from the radio menu. If this feature is disabled, rekey requests can only be initiated by the Key Management Controller (KMC) operator.

Rekey Request Status Alert Tone	Use the UP/DOWN arrow keys to enable/disable the Rekey Request Status Alert Tone feature. If this feature is enabled, the radio will generate a tone whenever it receives a Rekey Request status from the Key Management Controller (KMC) if the user exits the Rekey Request menu before the status message was received. The tone generated by the radio basically warns the user that the radio had not received a status message from the KMC until the time that the user exited the menu.
Erase Previous Index on Index Change	Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will erase all keys in the old key index upon receiving a change index command from the Key Management Controller (KMC). This feature does not affect non-indexed keys.
Radio Inhibit via OTAR	Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the dispatcher or Key Management Controller (KMC) operator will be able to make the radio temporarily inoperable if it is within range of the system. This is useful if the radio is stolen or otherwise lost.
KMC ID	Enter a hexadecimal value or use the UP/DOWN arrow keys to select the Key Management Controller (KMC) ID to be used. This ID allows the radio to be identified by the KMC. The KMC ID should therefore be unique within a system, so that each radio will be able to communicate rekeying commands to the KMC. The radio will be able to send OTAR commands to the KMC and receive OTAR commands from the KMC.
MDC System #	Use the UP/DOWN arrow keys to select the MDC System to be used by the Over-The-Air-Rekeying (OTAR) commands. To add and/or configure MDC Systems, access the MDC SYSTEMS screen ( <b>F4/F6/F4/F3</b> ).
Remote Monitor via OTAR	<i>This field will be visible for Portables only.</i> Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the dispatcher or the Key Management Controller (KMC) will be able to key up the radio with a live microphone. The dispatcher or controller can thus monitor conversations in which the user of a specific radio is involved.
Remote Keyup Time Constant (sec)	<i>This field will be visible for Portables only and the Remote Monitor via OTAR field is set to Enabled.</i> Use the UP/DOWN arrow keys to select the desired Remote Keyup Time Constant value. The value may also be entered directly. This field determines the time period for which the radio will stay keyed up when implementing the Radio Trace or Remote Monitor feature. The valid range is from 10 to 120 seconds in 10-second increments.

# Radio Wide Emergency Options D C B G

From the MAIN MENU, press **F4**, **F3**, **F2** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CONFIG:RADIO OPTIONS:EMERG OPT	Use UP/DOWN Arrows to Select Choice.								
<p>RADIO WIDE EMERGENCY OPTIONS -----</p> <p>Silent Alarm.....Disabled Channel Delay (sec).....02</p> <p>Keep Alive.....Disabled</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Portables Only*

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...CONFIG:RADIO OPTIONS:EMERG OPT	Use UP/DOWN Arrows to Select Choice.								
<p>RADIO WIDE EMERGENCY OPTIONS -----</p> <p>Silent Alarm.....Disabled Channel Delay (sec).....02</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Mobiles Only*

*This screen can be accessed only if the radio supports Emergency options.* The Emergency parameters listed on this screen are radio wide in that they apply both to Conventional and Trunked signalling. Emergency operation must be enabled on the MDC SYSTEM screen (**F4/F6/F4/F3**) and/or the TRUNKING PERSONALITY EMERGENCY OPTIONS screen (**F4/F4/F4/F8**). In addition, the Emergency button must be configured on the RADIO WIDE BUTTON CONFIGURATION screen (**F4/F3/F3/F2**).

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is selected, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### Silent Alarm

*This feature is not compatible with Emergency Receive. To enable Silent Alarm, make sure Emergency Receive is disabled on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6). Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will operate silently when transmitting an emergency signal. No audible or visual indication of the transmission will occur.*

Emergency operation must be enabled on the MDC SYSTEMS screen (F4/F6/F4/F3) and/or the TRUNKING PERSONALITY EMERGENCY OPTIONS screen (F4/F4/F4/F8) and/or the ASTRO SYSTEM screen (F4/F6/F5/F3). In addition, the Emergency button must be configured on the RADIO WIDE BUTTON CONFIGURATION screen (F4/F3/F3/F2).

**Note:** *The Silent Alarm feature is NOT compatible with Emergency Receive (F4/F3/F6). To enable Silent Alarm, make sure Emergency Receive is disabled.*

### Channel Delay (sec)

Use the UP/DOWN arrow keys to select the Emergency Channel Delay or enter a value directly. The radio must be on a channel for the time specified here before it can transmit an emergency signal. For Emergency operation, this delay is sometimes desired to prevent the radio from sending an emergency signal on an undesired channel (which may occur while the user is changing channels and pressing the Emergency button). The valid range of values is 0 (zero) to 7 seconds.

### Keep Alive

*This field will be visible for Portables only.* If this field is enabled, the radio will remain powered-on during an Emergency transmission regardless of the position of the power switch.

# More Radio Wide Options

## DCBI

From the MAIN MENU, press **F4**, **F3**, **F2** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CONFIG:RADIO OPTIONS:OPTIONS	Use UP/DOWN Arrows to Select Choice.
RADIO WIDE OPTIONS -----	
Ultra Narrow IF Filter...5.76 kHz Cyclic Keying.....Disabled	Evacuation Tone.....Disabled Soft Power Off.....Disabled
	Num Time Out Timer Table (sec) -----
	1           Infinite
	2           30
	3           60
	4           120
F1 HELP	F2      F3      F4      F5      F6      F7      F8      F9      F10 EXIT

### *ASTRO SABER Portables Only*

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CONFIG:RADIO OPTIONS:OPTIONS	Use UP/DOWN Arrows to Select Choice.
RADIO WIDE OPTIONS -----	
Ultra Narrow IF Filter...7.8 kHz Cyclic Keying.....Disabled Rotary Light Time (sec).....15 Auto Rotary Light.....Disabled	Evacuation Tone.....Disabled Soft Power Off.....Disabled
	Num Time Out Timer Table (sec) -----
	1           Infinite
	2           30
	3           60
	4           120
F1 HELP	F2      F3      F4      F5      F6      F7      F8      F9      F10 EXIT

### *ASTRO XTS 3000 Portables Only*

The option parameters listed on this screen apply both to Conventional and Trunking operation.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...CONFIG:RADIO OPTIONS:OPTIONS	Use UP/DOWN Arrows to Select Choice.								
RADIO WIDE OPTIONS ----- Ultra Narrow IF Filter....7.8 kHz Cyclic Keying .....Disabled Extended DEK.....Enabled Motorcycle Radio.....Disabled Num Time Out Timer Table (sec) ----- 1           Infinite 2           30 3           60 4           120									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

***Mobiles Only***

**Field Definitions**

Ultra Narrow IF Filter

Use the UP/DOWN arrow keys to select the Ultra Narrow IF Filter Bandwidth value. The 7.8 kHz Ultra Narrow IF Filter Bandwidth value is designed for radios operating on channels with narrow bandwidths. These bandwidths are used in environments where adjacent channel interference is not a significant problem (Europe for instance). The 5.76 kHz Ultra Narrow IF Filter Bandwidth value is designed to provide greater levels of adjacent channel interference protection for radios operating on channels with narrow bandwidths.

Cyclic Keying

Use the UP/DOWN arrow keys to enable or disable the Cyclic Keying feature. When the Cyclic Keying feature is enabled, power ramp up/down of transmit power is enabled in order to meet both the ETS-300 and FTZ (Cyclic Keying) requirements in addition to the timing requirements for the existing MPT 1327 Trunking system.

***Note:** Cyclic Keying should be enabled ONLY for radios used in Europe.*

Rotary Light Time

*This field will be visible for ASTRO XTS 3000 models only.* Use the UP/DOWN arrow keys to select the desired value. The setting in this field determines the duration for which the Rotary Switch will remain illuminated after the Light Button is pressed. For radios equipped with a display, the Display Light Time (**F4/F3/F6**) will be automatically adjusted to match the Rotary Light Time that you choose in this field. This, in effect, results in synchronized behavior between the Rotary Switch and the radio display lighting.

Valid entries range from five to 60 seconds in five-second increments. A value of Infinite is also available, in which case, the light(s) will remain on until the Light button is pressed again.

Auto Rotary Light	<i>This field will be visible for ASTRO XTS 3000 models only.</i> Use the UP/DOWN arrow keys to select the desired value. If this feature is enabled, the Rotary Switch will remain illuminated after the Light button is pressed. For radios equipped with a display, the Auto Light (F4/F3/F6) will be automatically adjusted to match your selection for Auto Rotary Light. This, in effect, result in synchronized behavior between the Rotary Switch and the radio display lighting. The light(s) will time out and automatically turn off based on the duration selected for the Rotary Light Time feature.
Motorcycle Radio	<i>This field is a read-only field which will be visible for Motorcycle models only.</i> This is the radio wide flag that indicates whether or not the radio is a motorcycle radio.
Evacuation Tone	<i>This field will be visible for Portables only.</i> Use the UP/DOWN arrow keys to enable/disable this option. When PTT button is pressed causing the radio to transmit in a group call mode and the top mounted button (hard-coded) is pushed, an evacuation tone (high/low) is sent to the entire talkgroup and to the initiating radio's speaker. De-keying the radio de-activates the tone.
Soft Power Off	<i>This field will be visible for Portables only.</i> Use the UP/DOWN arrow keys to select the Soft Power Off Button. When the Soft Power Off field is disabled, the radio will turn off when the power switch is placed in the Off position. However, if a Soft Off Button is selected, the radio will not power off until the power switch is positioned in the Off position AND the selected side button is pressed.
Time-Out Timer Table (sec)	Use the UP/DOWN arrow keys select the four Time-Out Timer (TOT) values available to each personality. Each Conventional channel or Trunking personality may reference one of the four values that are defined in this field. TOT values range from 15 to 465 seconds in 15-second increments. A value of Infinite is also available.  If the radio is transmitting and the TOT time expires, the radio will automatically be de-keyed and a continuous alert tone will be generated as long as the PTT button is pressed. To continue transmitting, the PTT button must be released and the radio re-keyed.
Extended DEK	This field controls whether the extended DEK features are available. Please ensure that your radio's firmware version supports these features before enabling this field.

**Note:** This field is for Mobiles only.

The extended DEK features are:

StsX - Direct Status

MsgX - Direct Message

Mode - Direct Mode

The factory default is Enabled

Radio Wide  
Features  
Configuration Menu  
**D C C**

At the MAIN MENU, press **F4**, and then **F3** twice to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:	Select Function F1 - F10.								
MAIN:CHANGE/VIEW:CONFIG:FEATURES									
<p style="text-align: center;">RADIO WIDE FEATURES CONFIGURATION MENU -----</p> <p>F1 - HELP F2 - Button/Rotary Configuration F3 - Switch Configuration F4 - Menu Item List Configuration F5 - F6 - F7 - F8 - F9 - F10 - EXIT, Return to Radio Wide Configuration Menu</p>									
F1 HELP	F2 BUTTON CONFIG	F3 SWITCH CONFIG	F4 MENU ITEM	F5	F6	F7	F8	F9	F10 EXIT

*Portables Only*

MOTOROLA Radio Service Software ASTRO MOBILE Model:	Select Function F1 - F10.								
MAIN:CHANGE/VIEW:CONFIG:FEATURES									
<p style="text-align: center;">RADIO WIDE FEATURES CONFIGURATION MENU -----</p> <p>F1 - HELP F2 - Button/Rotary Configuration F3 - Switch Configuration F4 - Menu Item List Configuration F5 - DEK F6 - Vip In F7 - Vip Out F8 - F9 - F10 - EXIT, Return to Radio Wide Configuration Menu</p>									
F1 HELP	F2 BUTTON CONFIG	F3 SWITCH CONFIG	F4 MENU ITEM	F5 DEK	F6 VIP IN	F7 VIP OUT	F8	F9	F10 EXIT

*Mobiles Only*

This screen is a multi-level menu that is used to change, view, or modify codeplug features and option configurations that affect both Conventional and Trunking operation. Typically, when you begin to edit a codeplug, you must access this menu and configure Radio wide options first by working your way through the screens located below this menu. This will allow the options on other screens to reflect Radio wide options. *Some fields will not be visible if the radio does not support the options that they relate to.*

The radio is shipped from the factory with a preset feature and option configuration, including the configuration of the control buttons, switches, and menu (*display models only*). The function (and location) of most of these operator controls may be modified if necessary to

provide more user flexibility and/or permit access to other user-defined features and options.

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, or a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and may confuse the operator.

## Function Key Descriptions

F2 - BUTTON CONFIG (Button/Rotary Configuration)	Brings up a screen where you can edit button and rotary assignments for the radio.
F3 - SWITCH CONFIG (Switch Configuration)	Brings up a screen where you can edit switch assignments for the radio.
F4 - MENU ITEM (Menu List Item Configuration)	<i>This function will be visible for front-display models only.</i> Brings up a screen where you can configure menus that appear on the radio's display.
F5 - DEK (Direct Entry Keypad)	<i>This function will be visible for non-motorcycle Mobiles only.</i> Brings up a screen where you can specify the number of DEK (Direct Entry Keypad) boxes that are connected to the radio, and add or configure buttons.
F6 - VIP IN (Vehicle Interface Port Input)	<i>This function will be visible for non-motorcycle only.</i> Brings up a screen where you can define Vehicle Interface Port (VIP) input fields. These fields allow the radio to be controlled by circuits outside the radio system.
F7 - VIP OUT (Vehicle Interface Port Output)	<i>This function will be visible for non-motorcycle only.</i> Brings up a screen where you can define Vehicle Interface Port (VIP) output fields. These fields allow the radio to be controlled by circuits outside the radio system.

Radio Wide Button Configuration  
(*Mobiles Only*)

D C C B

At the MAIN MENU, press **F4**, **F3** twice, and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model:		
..CHANGE/VIEW:CONFIG:FEATURES:BUTTONS		
CONTROL HEAD		
PWR <input type="checkbox"/>	<input type="text"/>	[Blnk] [Phon] [Scan] [Call] [ Sel]      [1] [2] [3] Srch Blnk Lock
	<input type="text"/>	[4] [5] [6] Sts Blnk Msg
	<input type="checkbox"/>	[7] [8] [9] H/L Mon Dir
	<input type="checkbox"/>	[*] [0] [#] Rcl Blnk Del
CONTROL HEAD BUTTONS		
F1 HELP	F2	F3      F4      F5      F6      F7      F8      F9      F10 EXIT

*Mobiles Only*

**Note:** The screen above is provided for illustration purposes only. Please refer to the RSS for the actual screen view.

This screen is used to assign functions to specific buttons. Use the UP/DOWN arrow keys to select the desired function for each button and then use the **Enter** or **Tab** key to advance to the next button position. Use **Shift-Tab** to back up to the previous button position.

Factory default button assignments are listed on the following pages.

**Note:** *The appearance of this screen and the availability of certain button functions described below depends on your radio model and the options you have selected for this radio. You may therefore not be able to select some of these functions/choices for the radio currently being configured.*

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, or a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and may confuse the operator.

Button Function	Description
Airh	Airhorn tone on/off.
Blank	Not assigned to any feature of the radio. No tone will sound.
Call	Used to program the Call button for use with Trunking Private Call and/or Conventional MDC Call.
Del	Used to delete digits, or as Scan Nuisance Delete in Conventional or Trunking Scan. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons. Feature position is selectable for W4 and W5 Control Heads.</i>
Dim	Used to change the display brightness to one of four levels: from off to high, from high to medium, from medium to low, or from low to off. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons.</i>
Dir	Used on a Conventional mode to choose a Repeater or Direct Transmit Frequency and Coded Squelch.
DynP	Used for dynamic Priority Scan assignment.
Emer	Used with the Conventional and/or Trunking Emergency feature to initiate Emergency operation.
HiLo	Used to switch HiLo tones on/off.
H/L (Horn & Lights)	Used with the Conventional and/or Trunking External Alarm option to turn the external alarms ON/OFF and to configure the alarms. These alarms are activated when individual calls (Private Call, Call Alert Page, Phone, etc.) are received.
Home	Used to exit a feature such as Scan. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons.</i>
Lght	Toggles display keypad backlight on/off.
Lock	Used with the Automatic Multiple Site Switching (AMSS) option or the SmartZone option to display the lock status and toggle between lock and unlock status.
LPwr	Sets the transmitting power to low.
Man	Sets manual tone on/off.
Mode	Used to change the current channel. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons.</i>
Menu	Used to pick functionalities which are not programmed into a designated button.
Mon	Used to monitor channel traffic; either take the microphone off-hook or press the MON button momentarily. MON ON display indicates that the radio is monitoring. On coded squelch modes, this turns off receive coded squelch operation and allows monitoring of all the activity on the channel. The busy indicator will also light up when channel activity is present or the radio is unsquelched.
Msg	Used with the Conventional MDC-1200 Message option and/or the Trunking Message option to enter or exit the Message feature.
Nuisance Delete	<i>This selection is not available in this version.</i> When scan is on, a press of this button will delete the current channel from the scan list until scan is turned off and then back on again.
PA	Used to switch to Public Address mode.

Page	Used with the Conventional MDC-1200 Page option and/or the Trunking Page (Call Alert) option to select a Page ID and send a page.
Phon	Used with the Conventional Phone option and/or the Trunking Phone option to select phone numbers and place a phone call.
Prog	Scan program.
Pwr	Used to turn on the radio. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons. Feature position is selectable for W4 and W5 Control Heads.</i>
Rcl	Used to recall the last acknowledged status/message and to scroll through the list of previously set modes until you find the mode you want to change. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons. Feature position is selectable for W4 and W5 Control Heads. Feature position is not selectable for W7 and W9 Control Heads.</i>
Resp	Call Response to Phone Receive or Call Receive.
Rpgm	Used on Trunking modes with the Dynamic Regrouping option to show the current dynamic regrouping state and to send in a Re-program Request.
Scan	Used with the Conventional Scan and/or the Trunking Scan features to select scan lists and turn scan on/off.
Sec	The SECURENET button is used with the SECURENET option to switch between Clear (Off) and Coded (On) operation.
Sel	Select.
Sirn	Siren.
Site	Used on a Trunking mode with the AMSS option or the SmartZone option to display the current site and to force a search.
Ste	Used with the AMSS option or the SmartZone option to display the lock status and toggle between lock and unlock status.
Sts	Used with the Conventional MDC-1200 Status option and/or the Trunking Status option to enter or exit the status function.
TGrp	<i>This feature is available for radios equipped with CAI Digital Operation only.</i> It is used to switch from preset to any Talkgroup from the Personality's Conventional Talkgroup List. When a Talkgroup from the list is selected, all personalities using that list will also switch to the Talkgroup.
Tch(1-4)	Used to activate the One Touch feature programmed for the selected button.
Unpr	This button is not assigned to any feature of the radio. A chirp tone will sound.
Vol	Used to adjust the volume of the radio. <i>The availability of this feature depends on the radio's Control Head. Some of these features CANNOT be selected on the buttons.</i>
VRS	Used to activate/deactivate the Vehicular Repeater System, <i>if the radio is so equipped.</i>
Wail	Used to toggle wail tone on/off.
Xmit	Used to transmit. The radio's LED will light up to indicate that the radio is transmitting.
XRad	Toggles external radio on/off.
Yelp	Toggles yelp tone on/off.
ZnDn	Used to scroll downward through the zones in the radio, <i>if Zone operation is enabled.</i>
ZnUp	Used to advance upward through the zones in the radio, <i>if Zone operation is enabled.</i>

# Radio Wide Button Configuration (Portables Only)

## D C C B

At the MAIN MENU, press **F4**, **F3** twice, and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows to Select Choice.
..CHANGE/VIEW:CONFIG:FEATURES:BUTTONS		
RADIO WIDE BUTTON CONFIGURATION -----		
Button -----	Conventional -----	Trunking -----
Top Button	Emergency	Emergency
16 Pos Rotary	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Phone
Side Button 2	Light	Light
Side Button 3	Talkaround/Direct	Site Disp/Srch
F1 HELP	F2 HHCH BUTTONS	F3 F4 F5 F6 F7 F8 F9 F10 EXIT

### ASTRO SABER Portables Only

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows to Select Choice.
..CHANGE/VIEW:CONFIG:FEATURES:BUTTONS		
RADIO WIDE BUTTON CONFIGURATION -----		
Button -----	Conventional -----	Trunking -----
Orange Button	Emergency	Emergency
16 Pos Rotary	Channel Select	Channel Select
Side Button 1 (Top)	Monitor	Phone
Side Button 2	Light	Light
Side Button 3	Talkaround/Direct	Site Disp/Srch
F1 HELP	F2	F3 F4 F5 F6 F7 F8 F9 F10 EXIT

### ASTRO XTS 3000 Portables Only

This screen is used to assign the features to specific buttons. Use the UP/DOWN arrow keys to select the desired function for this button and then use the **Enter** or **Tab** key to advance to the next button position. Use **Shift-Tab** to back up to the previous button position.

Button assignments are listed on the following pages.

**Note:** *The appearance of this screen and the availability of certain button functions described below depends on your radio model and the options you have selected for this radio. You may therefore not be able to select some of these functions/choices for the radio currently being configured.*

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, or a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and may confuse the operator.

## Function Key Descriptions

F2 - HHCH BUTTONS  
(Hand-Held Control Head  
Button)

*This screen can be accessed for ASTRO SABER Portables only. Brings up a screen where the functionality of each HHCH button is defined.*

## Field Definitions

Conventional

Button Function	Description
Blank	This button is not assigned to any feature of the radio ( <i>Rotary only</i> )
Call Alert	Used to switch the radio into the appropriate mode for sending out a page. <i>For the radio to function properly, this feature must also be enabled on the ASTRO CONVENTIONAL PERSONALITY OPTIONS screen (F4/F6/F3/F9/F6). If MDC mode operation is required, this feature must be enabled on the MDC OPTIONS screen (F4/F6/F3/F7).</i>
Call Response	Used to respond to a Private Call, or Call Alert, or Phone Call. <i>This function should be used for Response Only radios, or in conjunction with the Phone /Private Call functions assigned to the radio menu.</i>
Channel/Select	Used to change channels ( <i>Rotary only</i> ).
Dynamic Priority	Used to increase the priority of the current active channel.
Emergency	Used to activate an Emergency transmission. ( <i>Not available on all modes.</i> ) <i>For the radio to function properly, this feature must also be enabled on the MDC SYSTEM screen (F4/F6/F4/F3).</i>
Light	Used to toggle the display light on/off.
Message	Used to activate the Message feature.
Monitor	Used to unsquelch the radio when the button is pressed, allowing the user to listen to activity on the channel.
Nuisance Delete	Used to remove the current active channel from the list.
Phone	Used to enable the DTMF Encoder. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Rptr Acc Button 1	Used to manually send a repeater access request code.
Rptr Acc Button 2	Used to manually send a repeater access request code.
Scan	Used to enable/disable Scan. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Select Call	Used to switches the radio into the appropriate mode to send out a Selective Call. <i>For the radio to function properly, this feature must also be enabled on the ASTRO CONVENTIONAL PERSONALITY OPTIONS screen (F4/F6/F3/F9/F6). If MDC mode operation is required, this feature must be enabled on the MDC OPTIONS screen (F4/F6/F3/F7).</i>
Status	Activates the Status feature.

Talkaround Direct	Enables/Disables talkaround for transmit. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Talkgroup	Used to switch from preset to any Talkgroup from the Personality's Conventional Talkgroup list. When a Talkgroup is selected, all personalities using that list will also switch to that Talkgroup (CAI only option)
Unprogrammed	This button is not assigned to any feature of the radio. A bad key chirp tone will sound.
Volume Set Tone	Generates a tone for the duration of the press.
Zone Select	Changes Zones ( <i>Rotary only</i> ).

## Trunking

Button Function	Description
Blank	This button is not assigned to any feature of the radio ( <i>Rotary only</i> )
Call Response	Used to respond to a Private Call, or Call Alert, or Phone Call. <i>This function should be used for Response Only radios, or in conjunction with the Phone /Private Call functions assigned to the radio menu.</i> <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Channel/Select	Used to change channels or subfleets ( <i>Rotary only</i> ).
Emergency	Used to activate an Emergency transmission. ( <i>Not available on all models.</i> ) <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Light	Used to toggle the display light on/off.
Message	Used to activate the Message feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Nuisance Delete	Used to remove the current active channel from the list.
One Touch X	Activates the One Touch feature programmed for the selected button. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9).</i>
Page	Used to enable the Call Alert feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Phone	Used to answer or initiate a Phone Call. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Private Call	Enables the Private Call feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Reprogram Request	Used to enable the Reprogram Request feature which transmits a Trunking reprogram request.
Scan	Used to enable/disable Scan. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>

Site Lock/Unlock	Enables/Disables site automatic site changes for AMSS or SmartZone operation. <i>For radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Site Display/Srch	Displays the current site or enables a site search for AMSS or SmartZone operation. <i>For radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Status	Used to activate the Status feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Unprogrammed	No radio feature has been assigned to this button. A bad key chirp tone will sound.
Volume Set Tone	Generates a tone for the duration of the press.
Zone/Select	Changes Zones <i>(Rotary only)</i> .

Hand-Held Control  
Button  
Configuration  
(**ASTRO SABER  
Portables Only**)

D C C B B

At the MAIN MENU, press **F4**, **F3** twice and then **F2** twice to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows to Select Choice.
...FEATURES:BUTTONS:HHCH BUTTONS		
HAND HELD CONTROL HEAD BUTTON CONFIGURATION -----		
Button	Conventional	Trunking
-----	-----	-----
Top Button Left	Unprogrammed	Unprogrammed
Top Button Middle	Unprogrammed	Unprogrammed
Top Button Right	Unprogrammed	Unprogrammed
Side Button 1 (Top)	Unprogrammed	Unprogrammed
Side Button 2	Unprogrammed	Unprogrammed
Side Button 3	Unprogrammed	Unprogrammed
F1 HELP	F2	F3
F4	F5	F6
F7	F8	F9
F10 EXIT		

**ASTRO SABER Portables Only**

*Models II and III ASTRO SABER Portables can be equipped with an optional Hand Held Control Head. This screen allows you to modify the function performed by Hand-Held Control Head (HHCH) buttons. A button may be configured to perform different Conventional and Trunking operations. However, commonality is strongly urged for features available and desired in both operations.*

Use the UP/DOWN arrow keys to select the function of the currently highlighted button for Trunking operation. Depending on your radio version and model number, it will be possible to choose from all or some of the functions listed on the following page.

**Note:** *Hand-Held Control Head button features may be defined independent of the actual radio button configurations. This will NOT adversely affect the radio since it is equipped to correctly support both sets of buttons simultaneously.*

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, or a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and may confuse the operator.

## Field Definitions

### Conventional

Button Function	Description
Call Alert	Switches the radio into the mode required to dispatch out a page. <i>For the radio to function properly, this feature must also be enabled on the ASTRO CONVENTIONAL PERSONALITY OPTIONS screen (F4/F6/F3/F9/F6). If MDC mode operation is required, this feature must be enabled on the MDC OPTIONS screen (F4/F6/F3/Set Signalling=MDC/F7).</i>
Call Response	Used to respond to a Private Call, or Call Alert, or Phone Call. <i>This function should be used for Response Only radios, or in conjunction with the Phone/Private Call functions assigned to the radio menu.</i>
Dynamic Priority	Used to increase the priority of the current active channel.
Emergency	Used to activate an Emergency transmission. <i>(Not available on all models.) For the radio to function properly, this feature must also be enabled on the MDC SYSTEM screen (F4/F6/F4/F3).</i>
Keypad Lock	Locks up the radio keypad.
Light	Used to switch on the display light.
Message	Used to activate the Message feature.
Monitor	The radio will unsquelch when the button is pressed, allowing you to listen to activity on the channel.
Nuisance Delete	Used to remove the current active channel from the list.
One Touch X	Activates the One Touch feature programmed for the selected button. <i>For the radio to function properly, this feature must also be enabled and configured on the CONVENTIONAL RADIO WIDE OPTIONS screen (F4/F6/F2).</i>
Phone	Enables the DTMF Encoder. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Rab X	Used to manually send a Repeater Access request code.
Scan	Used to enable/disable Scan. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Select Call	Switches the radio into the mode required to dispatch a Selective Call. <i>For the radio to function properly, this feature must also be enabled on the ASTRO CONVENTIONAL PERSONALITY OPTIONS screen (F4/F6/F3/F9/F6). If MDC mode operation is required, this feature must be enabled on the MDC OPTIONS screen (F4/F6/F3/Set Signalling=MDC/F7).</i>
Status	Used to activate the Status feature.
Talkaround/Direct	Used to enable/disable Talkaround for transmit. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Talkgroup	Used to switch from preset to any Talkgroup from the Personality's Conventional Talkgroup list. When a Talkgroup is selected, all personalities using that list will also switch to that Talkgroup (CAI only option)

Unprogrammed	No radio feature is assigned to this button. A bad key chirp tone will sound.
Volume Set Tone	Generates a tone for the duration of the press.

## Trunking

Button Function	Description
Call Response	Used to respond to a Private Call, or Call Alert, or phone call. <i>This function should be used for Response Only radios, or in conjunction with the Phone/Private Call functions assigned to the radio menu.</i> <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Emergency	Used to activate an Emergency transmission. <i>(Not available on all models.)</i> <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Keypad Lock	Locks up the radio keypad.
Light	Turns on the display light.
Message	Used to activate the Message feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Nuisance Delete	Used to remove the current active channel from the list.
One Touch X	Activates the One Touch feature programmed for the selected button. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9).</i>
Page	Enables the Call Alert feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Phone	Used to answer or initiate a Phone Call. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Private Call	Enables the Private Call feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Reprogram Req	Enables the Reprogram Request feature which transmits a Trunking reprogram request.
Scan	Used to enable/disable Scan. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Site Display/Srch	Displays the current Site or enables a Site search for AMSS or SmartZone operation. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Site Lock/Unlock	Enables/Disables Site automatic site changes for AMSS or SmartZone operation. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Status	Activates the Status feature. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>

Unprogrammed	No radio feature is assigned to this button. A bad key chirp tone will sound.
Volume Set Tone	Generates a tone for the duration of the press.

# Radio Wide Switch Configuration (*Portables Only*)

# D C C C

At the MAIN MENU, press **F4** and then **F3** three times to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows to Select Choice.
...FEATURES:SWITCHES		
RADIO WIDE SWITCH CONFIGURATION -----		
Switch Labels -----	Conventional Feature -----	Trunking Features -----
Two Position Concentric(A/B)		
Position A	Blank	Blank
Position B	Scan	Scan
Concentric Rocker Switch		
Position 1	Clear Tx Select	Clear Tx Select
Position 2	Secure Tx Select	Secure Tx Select
F1 HELP	F2	F3
F4	F5	F6
F7	F8	F9
F10 EXIT		

### *ASTRO SABER Portables Only*

MOTOROLA Radio Service Software ASTRO PORTABLE Model:		Use UP/DOWN Arrows to Select Choice.
...FEATURES:SWITCHES		
RADIO WIDE SWITCH CONFIGURATION -----		
Switch Labels -----	Conventional Feature -----	Trunking Features -----
Two Position Concentric		
Position A	Secure Tx Select	Secure Tx Select
Position B	Clear Tx Select	Clear Tx Select
Three Position Toggle		
Position A	Blank	Blank
Position B	Blank	Blank
Position C	Blank	Blank
F1 HELP	F2	F3
F4	F5	F6
F7	F8	F9
F10 EXIT		

### *ASTRO XTS 3000 Portables Only*

This screen allows you to modify the function performed by the radio control switches, which include the top Two-Position Concentric switch and the Concentric Rocker Switch. *Depending on the radio version and model, you will be able to choose from all or some of the functions listed on the following pages.*

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, or a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and may confuse the operator.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to scroll through all the available options.

## Field Definitions

Two Position Concentric -  
Position A

*This switch is applicable to both Conventional and Trunking operation. Use the UP/DOWN arrow keys to make your selection. This field determines the function of the Two-Position Concentric Switch when it is in the position marked by an “Ø” symbol on ASTRO XTS 3000 models, OR by an “A” symbol on ASTRO SABER models.*

Two Position Concentric -  
Position B

*This switch is applicable to both Conventional and Trunking operation. Use the UP/DOWN arrow keys to make your selection. This field determines the function of the Two-Position Concentric Switch when it is in the position marked by an “O” symbol on ASTRO XTS 3000 models, OR by a “B” symbol on ASTRO SABER models.*

**Note:** *For Secure-equipped ASTRO XTS 3000 models, this position “O” is fixed as “Clear Tx Select” when position “Ø” is set to “Secure Tx Select”.*

Concentric Rocker Switch -  
Position 1

*This field will be visible for ASTRO SABER radios only. This switch is applicable to both Conventional and Trunking operation. Use the UP/DOWN arrow keys to make your selection. This field determines the function of the Concentric Rocker Switch when it is in the position marked with “O”.*

**Note:** *For Secure-equipped radios, position “O” is fixed and defined as “Clear Tx Select” when position “Ø” is set to “Secure Tx Select”.*

Concentric Rocker Switch -  
Position 2

*This field will be visible for ASTRO SABER radios only. This switch is applicable to both Conventional and Trunking operation. Use the UP/DOWN arrow keys to make your selection. This field determines the function of the Concentric Rocker Switch when it is in the position marked with “Ø”.*

Three Position Toggle Switch

*This field will be visible for ASTRO XTS 3000 radios only and has three programmable positions. Use the UP/DOWN arrow keys to select the function for each of the positions on the Three-Position Toggle Switch located on top of the radio.*

Two-Position Concentric  
Switch Options

*Depending on your radio version and model, you will be able to choose from the possible options for position A of the Two-Position Concentric Switch located on top of the radio:*

Button Function	Description
Blank	No function. No tone will sound. Use Blank for Off; ex: A = Scan (On), B = Blank (Off).
Channel Select	Select or Change Channels. <i>This function must be assigned for BOTH Conventional and Trunking operations if applicable), and for BOTH positions of this switch.</i>
Secure Tx Select	Enables Secure transmissions. <i>This feature must also be configured on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i> <i>The radio must be equipped with a Secure encryption module for this feature to work.</i> <i>For Trunked radios, this feature must also be configured on the TRUNKING TALKGROUPS screen (F4/F4/F4/F7).</i> <i>This function is available for this switch ONLY on ASTRO XTS 3000 models and only on Switch Position A.</i>
Keypad Lock	Locks the keypad.
Mute	Enable/disable keypad beeps.
PL Disable	Disables PL/DPL decoder (i.e. Carrier Squelch only).
Scan	Enables Channel Scan. <i>This feature must also be configured on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i> <i>For Trunked radios, this feature must also be configured on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Scan List Prgm	Enables Scan List Programming. <i>This feature must also be configured on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i> <i>For Trunked radios, this feature must also be configured on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Talkaround/ Direct	Enter Talkaround mode (Tx freq = Rx freq). <i>This feature must also be configured on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Tx Inhibit	Disables all transmissions.
Tx Low Power	Changes Tx Power to the low setting.
Unprogrammed	A bad key chirp tone will sound.
Zone Select	Select or change Zones. <i>This function must be assigned for BOTH Conventional and Trunking operations if applicable), and for BOTH positions of this switch.</i>

Concentric Rocker  
Switch Options

The options for the Concentric Rocker Switch include all the options for the Two-Position Concentric Switch as well as the following:

Button Function	Description
Secure Tx Select	Sets Tx Mode to Secure.
Clear Tx Select	Sets Tx Mode to Clear.

**Note:** For Conventional radios, if clear/coded selection is desired, choose "Secure Tx Select" on Position B of the Rocker Switch.

Three-Position Toggle  
Switch Options

The options for the Three-Position Toggle Switch includes all options for the Two-Position Concentric Switch *with the exception of* Secure Tx Select and Clear Tx Select.

# Radio Wide Switch Configuration (*Mobiles Only*)

D C C C

At the MAIN MENU, press **F4** and **F3** thrice to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...CONFIG:FEATURES:SWITCHES	Use UP/DOWN Arrows to Select Choice.				
<p>RADIO WIDE SWITCH CONFIGURATION</p> <p>-----</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px dashed black;">Switch Labels</th> <th style="text-align: left; border-bottom: 1px dashed black;">Feature</th> </tr> </thead> <tbody> <tr> <td style="padding-left: 40px;">Ignition Switch</td> <td>Blank</td> </tr> </tbody> </table>		Switch Labels	Feature	Ignition Switch	Blank
Switch Labels	Feature				
Ignition Switch	Blank				
F1 HELP	F10 EXIT				

### *Mobiles Only*

This screen allows you to assign features to specific switches. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to scroll through all the ignition switch options.

**Note:** For W3 models, Radio - VipIn 2 on the VIP IN screen (**F4/F3/F3/F6**), must be set to Ignition Sense.

## Field Definitions

### Ignition Switch

The valid options for Ignition Switch are:

PTT Tx Inhibit	PTT transmission will be inhibited when the ignition is off.
Tx Inhibit	All transmission will be inhibited when the ignition is off. This includes emergency alarms.
Blank	Transmissions will not be inhibited when the ignition is off.

# Radio Wide Menu Item Configuration

## D C C D

At the MAIN MENU, press **F4**, **F3** twice and then **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Choice.				
...:CHANGE/VIEW:CONFIG:FEATURES:MENUS									
RADIO WIDE MENU ITEM CONFIGURATION -----									
#	Conv Item	#	Conv Item	#	Trk Item	#	Trk Item		
--	-----	--	-----	--	-----	--	-----		
1	Zone			1	Mute				
2	Mute								
3	Phon								
4	Call								
5	Prog								
6	View								
7	Dir								
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD		DELETE			ADD		DELETE	EXIT
	CNV ITM		CNV ITM			TRK ITM		TRK ITM	

**Note:** For ASTRO Mobiles, if there is no support for the hand-held control head (HHCH), this screen CANNOT be accessed.

Radio models with the front display utilize a menu which appears on the radio display to simplify radio operation. When the user presses the appropriate radio button to choose this menu, the sub-options or features for this menu item will appear on the menu. From here, the desired features can be accessed easily. For example, pressing View might display Phon, Call or Scan.

This RSS screen is used to customize the radio wide menu list. Depending on your radio version and model number, you will be able to choose from all or some of the functions listed on the following page. Features listed here but that are disabled in the personality will not be shown on the RADIO WIDE CONFIGURATION MENU. The menu items are displayed in the order in which they are placed in the list.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired function.

### Function Key Definitions

**F2** - ADD CNV ITM

Adds a Conventional item.

**F4** - DELETE CNV ITM

Deletes a Conventional item. You will be prompted before the item is actually deleted.

**F7** - ADD TRK ITM

Adds a Trunked item.

**F9** - DELETE TRK ITM

Deletes a Trunked item. You will be prompted before the item is actually deleted.

## Field Definitions

Conv Item

Use the UP/DOWN arrow keys to select the desired menu function. Press **F2** to add and **F4** to delete the highlighted Conventional item. *Depending on your radio version and model number, you will be able to choose from some or all of the functions listed below.*

Call	Select Private Call ID and send Private Call ( <i>Mobiles only</i> ). <i>For the radio to function properly, the Selective Call feature must be enabled on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>
Chan	Select/change Channels ( <i>Portables only</i> ).
Chan/Sub	Select/change Channels ( <i>Mobiles only</i> ).
Dir	Enable/disable Direct Mode (Talkaround). <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
DynP	Enable/disable Dynamic Regrouping.
Eras	Erase key. <i>The radio must be equipped with the multi-key option.</i>
H/L	Enable/disable Horn and Lights ( <i>Mobiles only</i> ). <i>This feature must also be enabled on the ALARM OPTIONS screen (F4/F3/F7).</i>
Indx	Select/change Index. <i>The radio must be equipped with the multi-key option.</i>
Key	Select/change key. <i>The radio must be equipped with the multi-key option.</i>
LogF	Enable/disable auto login. <i>The radio must be equipped with Secure hardware. The Auto-Login and Radio Lock features must be enabled on the RADIO WIDE SECURE OPTIONS screen (F4/F3/F2/F6) and the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>
Msg	Display the last acknowledged message to be transmitted and send a message.
Mute	Enable/disable keypad beeps.
None	No function on this menu. This is reserved for future use.
Nuis	Scan Nuisance Channel Delete ( <i>Portables only</i> ).
Page	Select Call Alert ID and send a Call Alert ( <i>Portables only</i> ). <i>For the radio to function properly, this feature must also be enabled on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>
Phon	Select DTMF Phone Number to be transmitted. Enter the PHONE feature. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Prog	Change Phone/Scan lists. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Pswd	Change Radio Lock password ( <i>Portables only</i> ). <i>For Pswd to appear on RADIO WIDE MENU ITEM CONFIGURATION screen, Radio Lock must be enabled on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>

Pwr	Enable/disable Tx Low Power.
Reky	Rekey request. <i>The radio must be equipped with the Over-The-Air-Rekey option.</i>
Rpgm	Request Dynamic regrouping ( <i>Portables only</i> ).
Scan	Enable/disable Channel Scan. <i>For the radio to function properly, a scan list must be specified on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Site	Change AMSS or SmartZone Site ( <i>Portables only</i> ). <i>For the radio to function properly, a scan list must be specified on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Sts	Display the last acknowledged status to be transmitted and send status.
TGrp	Used to switch from preset to any Talkgroup from the Personality's Conventional Talkgroup list. When a Talkgroup is selected, all personalities using that list will also switch to that Talkgroup (CAI only option)
Tx In	Enable/disable Tx Inhibit ( <i>Mobiles only</i> ).
View	View Phone/Scan lists. <i>For the radio to function properly, this feature must also be enabled on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).</i>
Zone	Select/change Zones ( <i>Portables only</i> ).
Zone/Sys	Select/change Zones ( <i>Mobiles only</i> ).

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and confuse the operator.

Trunk Item

Use the UP/DOWN arrow keys to select the desired menu function. Use **F7** to add, and **F9** to delete, Trunking Menu functions. *Depending on your radio version and model number, you will be able to choose from all or some of the functions listed below.*

Call	Select Private Call ID. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Chan/ Sub	Select/change Channels.
Dir	Enable/disable Direct Mode (Talkaround). <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
DynP	Enable/disable Dynamic Regrouping.
Eras	Erase key.
H/L	Enable/disable Horn and Lights ( <i>Mobiles only</i> ).
Indx	Select/change Index.
Key	Select/change key. <i>The radio must be equipped with the multi-key option.</i>
LogF	Enable/disable auto login. <i>The radio must be equipped with Secure hardware. The Auto-Login and Radio Lock features must be enabled on the RADIO WIDE SECURE OPTIONS screen (F4/F3/F2/F6) and the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>
Msg	Display the last acknowledged message to be transmitted and send a message. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Mute	Enable/disable keypad beeps.
None	No function on this menu. This is reserved for future use.
Nuis	Scan Nuisance Channel Delete ( <i>Portables only</i> ).
Page	Select Call Alert ID. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F3).</i>
Phon	Select DTMF Phone Number to be transmitted. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Prog	Change Phone/Private Call/Scan lists. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Pswd	Change Radio Lock password ( <i>Portables only</i> ). <i>Radio Lock must be enabled on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6).</i>
Pwr	Enable/disable Tx Low Power.
Reky	Rekey request.
Rpgm	Request Dynamic Regrouping.

Scan	Enable/disable Channel Scan. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Site	Change AMSS or SmartZone Site. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING SYSTEM screen (F4/F4/F3).</i>
Sts	Display the last acknowledged status to be transmitted and send status. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Tx In	Enable/disable Tx Inhibit.
View	View Phone/Private Call/Scan lists. <i>For the radio to function properly, this feature must also be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4).</i>
Zone	Select/change Zones.

**Note:** Do NOT duplicate a function on multiple controls (on a button and a switch, a button and a menu, or a switch and a menu for instance). This may cause the radio to malfunction and confuse the operator.



To delete a DEK BOX, press **F5**. The order of deletion will be:

DEK C, then DEK B, then lastly DEK A.

## Function Key Definitions

**F2** -ADD DEK BOX

Adds a DEK box.

**F5** - DELETE DEK BOX

Deletes a DEK box.

## Field Definitions

Number of DEK Boxes

This is a view only field that represents the number of DEK boxes that are connected to the radio. Each DEK box represents a group of eight DEK buttons. This field will change as the DEK boxes are added or deleted via the function keys. The maximum number of DEK boxes is three. Press **F2** to add a DEK box and **F5** to delete a DEK box.

Zone

This field represents the zone that the radio will change to when this button is pressed if the button is set to Mode.

Zones may get added or deleted with the function keys at the bottom of the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen (**F4/F8**). The range is from 1 to the largest channel number defined. The factory default is 1.

Channel Number

This field represents the channel that the radio will change to when this button is pressed if the button is set to Mode.

Channels may be added or deleted with the function keys at the bottom of the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen (**F4/F8**). The range is from 1 to the largest channel number defined for the specified. The factory default is 1.

DEK Buttons

Airh	Toggles Airhorn tone On/Off.
Blnk	This button is not assigned to any feature of the radio.
HiLo	Toggles HiLo tone On/Off.
Man	Toggles Manual tone On/Off.
Mode	The Mode button is used to change directly to a specific Zone/Channel. The Zone and Channel must be defined in the Zone and Chan fields.
MsgX	Sends a selected message. This feature will only work if the radio is on a personality which has Message set to Enabled. To enable message, go to either the Trunking Personality screen ( <b>F4/F4/F4</b> ), or the ASTRO Systems screen ( <b>F4/F6/F5/F3</b> ) or the MDC Systems screen ( <b>F4/F6/F4/F3</b> ).
PA	Toggles Public Address Mode.
Sirn	Toggles Siren On/Off.
StsX	Sends a selected status. This feature will only work if the radio is on a personality which has Status set to Enabled. To enable Status go to either the Trunking Personality screen ( <b>F4/F4/F4</b> ), or the ASTRO Systems screen ( <b>F4/F6/F5/F3</b> ) or the MDC Systems screen ( <b>F4/F6/F4/F3</b> ).
Unpr	Unprogrammed button. An uncomfortable key tone will be generated if this button is pressed.
Wail	Toggles Wail tone On/Off.
XRad	Toggles External Radio On/Off.
Yelp	Toggles Yelp tone On/Off.

**Note:** The availability of certain button functions described above depends on your radio model and options selected for this radio. Some of these functions/choices may therefore not be selectable for your radio.

## VIP In (*Mobiles Only*)

# D C C F

At the MAIN MENU, press **F4**, **F3** twice and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model:	Use UP/DOWN Arrows to Select Choice.								
...CHANGE/VIEW:CONFIG:FEATURES:VIP IN									
VIP IN -----									
Vip In -----	Vip In Feature -----								
Radio Vipin 1	Horn Ring								
Radio Vipin 2	Blank								
Radio Vipin 3	Blank								
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Mobiles Only*

*This screen can be accessed for non-motorcycle Mobiles only.* This menu allows you to define Vehicle Interface Port (VIP) features for the VIP Input ports using the UP/DOWN arrow keys. If the radio has Direct Entry Keypads (DEKs), each DEK will have VIP inputs. The Vehicle Interface Port (VIP) Inputs allow the radio to control circuits outside the radio system. The VIP Input fields are related to the number of Direct Entry Keypad (DEK) boxes that the radio has in the following manner:

- 0 DEK boxes -> 3 VIP Ins
- 1 DEK box -> 3 VIP Ins
- 2 DEK boxes -> 6 VIP Ins
- 3 DEK boxes -> 9 VIP Ins

An example of a typical VIP In feature is "Horn Ring." The entry in the Vip In column indicates the DEK box to which the Input is connected. VIP In assignments vary depending on the number of DEK boxes connected to the radio. For each configuration, the button assignments should be as follows:

No DEK Box	One DEK Box	Two DEK Boxes	Three DEK Boxes
Radio -VipIn 1	Dek A -VipIn 1	Dek A -VipIn 1	Dek A -VipIn 1
Radio -VipIn 2	Dek A -VipIn 2	Dek A -VipIn 2	Dek A -VipIn 2
Radio -VipIn 3	Dek A -VipIn 3	Dek A -VipIn 3	Dek A -VipIn 3
		Dek B -VipIn 1	Dek B -VipIn 1
		Dek B -VipIn 2	Dek B -VipIn 2
		Dek B -VipIn 3	Dek B -VipIn 3
			Dek C -VipIn 1
			Dek C -VipIn 2
			Dek C -VipIn 3

However, even if no DEK boxes are connected, the radio can be programmed with VIP In features.

VIP Out (***Mobiles Only***)

D C C G

At the MAIN MENU, press **F4, F3** twice and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model:	Use UP/DOWN Arrows to Select Choice.								
..CHANGE/VIEW:CONFIG:FEATURES:VIP OUT									
VIP OUT -----									
Vip Out -----	Vip Out Feature -----								
Radio VipOut 1	Horn								
Radio VipOut 2	Lights								
Radio VipOut 3	Horn Ring Trns								
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

***Mobiles Only***

*This screen can be accessed for non-motorcycle Mobiles only* This menu allows you to define Vehicle Interface Port (VIP) features for the VIP Output ports using the UP/DOWN arrow keys. The VIP Outputs allow you to use the radio to control circuits outside the radio system. If the radio has Direct Entry Keypads (DEKs), each DEK will have VIP outputs. However, the radio can be programmed with VIP Out features even if no DEK boxes are connected.

The entry in the Vip Out column indicates the DEK to which the output is connected. For example, "Dek A VipOut 1." The entry in the Vip Out Feature column indicates the feature which the VIP activates. For example, "Horn."

VIP Out assignments vary depending on the number of DEK boxes connected to the radio. For each configuration, the button assignments should be as follows:

No DEK Box	One DEK Box	Two DEK Boxes	Three DEK Boxes
Radio -VipOut 1 Radio -VipOut 2 Radio -VipOut 3	Dek A -VipOut 1 Dek A -VipOut 2 Dek A -VipOut 3	Dek A -VipOut 1 Dek A -VipOut 2 Dek A -VipOut 3 Dek B -VipOut 1 Dek B -VipOut 2 Dek B -VipOut 3	Dek A -VipOut 1 Dek A -VipOut 2 Dek A -VipOut 3 Dek B -VipOut 1 Dek B -VipOut 2 Dek B -VipOut 3 Dek C -VipOut 1 Dek C -VipOut 2 Dek C -VipOut 3

# Phone Configuration

## D C D

At the MAIN MENU, press **F4**, **F3** and then **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: Page 1 of 3 MAIN:CHANGE/VIEW:CONFIG:PHONE	Use UP/DOWN Arrows to Select Choice.
---	--------------------------------------

PHONE CONFIGURATION	
-----	
Man Acc Live Dialing.....Disabled	Phone Num Display Format..... USA
Num	Phone Text
-----	
1	PHONE 1
2	PHONE 2
3	PHONE 3
4	PHONE 4
5	PHONE 5
6	PHONE 6
7	PHONE 7
8	PHONE 8

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE			ACCESS	DIAL	EXIT
	NUMBER			NUMBER			DEACCESS	OPTIONS	

This menu allows you to edit telephone interconnect configurations for a radio including stored telephone numbers and aliases. These options are radio wide and apply to both Trunking and Conventional signalling.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If the field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value. Enter the phone number directly. Use the **PgUp** and **PgDn** keys to view additional pages of phone lists.

### Function Key Definitions

**F2 - ADD NUMBER**

Adds a new phone number entry.

**F5 - DELETE NUMBER**

Deletes an existing phone number. You will be prompted before the number is actually deleted.

**F8 - ACCESS/DEACCESS**

Brings up a screen where you can modify DTMF access codes.

**F9 - DIAL OPTIONS**

Brings up a screen where you can modify DTMF timing parameters.

### Field Definitions

Man Acc Live Dialing

*Manual Access Live Dialing will function only on personalities with unlimited phone access.* Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the user will be able to dial phone numbers and access codes directly from the keypad during transmission.

Phone Num Display Format

Use the UP/DOWN arrow keys to select the format for displaying telephone numbers. This feature is especially useful when the length of the number exceeds the number of characters that can be displayed on the radio. Valid choices are USA and None. If set to USA, the phone numbers will be assumed to be in the format: (area) code/number.

Phone Number

Enter a phone number of up to 16 characters. The digits 0 (zero) through 9 are all valid. So are the special characters "P", "\*" and "#". The "P" entry causes the radio to pause momentarily during dialing. The length of the pause is programmable from the DIAL OPTIONS screen (**F4/F3/F4/F9**).

Numbers can be added and deleted using the **F2** and **F5** keys respectively. New numbers will be added at the end of the list. A total of 19 numbers are allowed.

Phone Text

Enter the alphanumeric name that will appear on the radio display for this phone number. *The maximum number of characters will be determined by the radio model.*

## DTMF Access/ Deaccess Codes

# D C D H

At the MAIN MENU, press **F4**, **F3**, **F4** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Enter Code.
MAIN: CHANGE / VIEW : CONFIG : PHONE : CODES		
DTMF ACCESS/DEACCESS CODES -----		
Num	Access Code	Deaccess Code
---	-----	-----
1	*1P#	*1P#
F1 HELP	F2 ADD CODE	F3
F4	F5 DELETE CODE	F6
F7	F8	F9
F10 EXIT		

This screen allows the user to define Access/Deaccess Code pairs used for DTMF phone option. The Access Code is used to keep unauthorized users from using the interconnect system on the Repeater. The Deaccess Code is used to inform the system about the end of a call and thus minimize wasted air time. The valid symbols are 0 (zero) through 9, “\*”, “#” and “P” (for pause).

**Note:** These codes can be selected in the Auto Access Code field on the PHONE OPTIONS screen (**F4/F6/F3/F8**). *Up to 19 code pairs may be defined.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, enter the Access or Deaccess Code directly.

### Function Key Definitions

F2 - ADD CODE

Adds another Access/Deaccess Code pair.

F5 - DELETE CODE

Deletes the highlighted Access/Deaccess Code pair from the list. You will be prompted before the code pair is actually deleted.

## Field Definitions

### Access Code

Enter the code that will be used to access the phone line. Some Conventional interconnect systems require a "\*" to access the telephone line. Other systems require a multi-digit access code which consists of 1 to 4 digits and may or may not contain a "\*". Multi-digit access codes are used to prevent unauthorized subscriber units from accessing the interconnect system.

**Note:** To enter pause (P) from the keypad, press "\*" and then "#".

Codes can be added and deleted using the **F2** and **F5** keys respectively. New codes will be added at the end of the list. A total of 19 unique Access pairs are allowed.

### Deaccess Code

Enter a one- to four-digit release code to deaccess the phone line. Some *Conventional interconnect systems require a "# to release (disconnect) the telephone line when the user has completed the call.*

Release codes are used for system management purposes to improve system loading by eliminating dead air time after interconnect calls are completed.

**Note:** To enter pause (P) from the keypad, press "\*" and then "#".

Codes can be added and deleted using the **F2** and **F5** function keys respectively. New codes will be added to the end of the list. A total of 19 unique Deaccess pairs are allowed.

## Dialing Options

# D C D I

At the MAIN MENU, press **F4**, **F3**, **F4** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Choice.
MAIN:CHANGE/VIEW:CONFIG:PHONE:DTMF		
DIALING OPTIONS -----		
Phone Dialing.Immediate Buffered		DTMF Pause Time (ms).....1000
DTMF Digit Hangtime (ms)....1000		
Num	Initial Delay (ms)	Digit Duration (ms) Interdigit Delay (ms)
-----	-----	-----
1	1000	125 75
2	250	150 100
3	350	125 75
4	350	125 75
F1 HELP	F2	F3 F4 F5 F6 F7 F8 F9 F10 EXIT

This screen allows you to modify DTMF phone-wide parameters such as timing and phone dial operation. Each Conventional system uses one of these parameter sets which are selected in the DTMF Access Timing table field on the CONVENTIONAL PERSONALITY PHONE OPTIONS screen (**F4/F6/F3/F8**). Each Trunking system uses one of these parameter sets which are selected in the Phone DTMF Timing field on the TRUNKING SYSTEM OPTIONS screen (**F4/F4/F3/F9**).

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### Phone Dialing

Use the UP/DOWN arrow keys to select the type of Dialing operation from among the following:

Immediate Live	Automatically connects the radio to the system when entering phone mode (live dial). Allows the user to transmit each number as it is entered.
Immediate Buffered	Automatically connects the radio to the system when entering phone mode (buffered dial).
Delayed Buffered	Automatically connects the radio to the system when PTT is pressed (buffered dial). Allows the user to enter the phone number in the radio and then transmit the phone number after pressing PTT.

### DTMF Digit Hangtime (ms)

Use the UP/DOWN arrows to specify the amount of time the radio continues transmitting after completion of a DTMF digit transmission. Valid selections are 25 to 6375 ms in 25-ms increments.

### DTMF Pause Time (ms)

Use the UP/DOWN arrows to select the length of the pause before the radio begins to transmit DTMF digits. Valid selections are 500 to 4000 ms in 500-ms increments.

Initial Delay (ms)	Use the UP/DOWN arrows to select the pre-time for DTMF signalling or the length of time that carrier is transmitted before the DTMF digit is transmitted. Valid selections are 0 (zero) to 6375 ms in 25-ms increments.
Digit Duration (ms)	Use the UP/DOWN arrows to select the length of time that the DTMF digit will be transmitted. Valid selections are 25 to 6375 ms in 25-ms increments.
Interdigit Delay (ms)	Use the UP/DOWN arrows to select the time delay between transmission of digits in a DTMF digit transmission sequence. Valid selections are 0 (zero) to 250 ms in 25-ms increments.

# Radio Wide Scan Lists and Options

## D C E

From the MAIN MENU, press **F4**, **F3** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: Page 1 of 2 MAIN:CHANGE/VIEW:CONFIG:SCAN	Use UP/DOWN Arrows to Select Choice.																																																												
Scan List.....1 <div style="text-align: center;">SCAN LIST</div> <table border="1"> <thead> <tr> <th></th> <th>Mem</th> <th>Zn</th> <th>Chn</th> <th>Zone</th> <th>Channel</th> </tr> </thead> <tbody> <tr> <td>Scan Type.....Priority Mon</td> <td>1</td> <td>1</td> <td>1</td> <td>21</td> <td>1C-IA-1</td> </tr> <tr> <td>Trunking System ID.....1-1000</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Trunking System Type.....II/III</td> <td>3</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Priority 1 Type.....Fixed</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Priority 1 Member.....None</td> <td>5</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Priority 2 Type.....Fixed</td> <td>6</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Priority 2 Member.....None</td> <td>7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>NonPriority Members.....Fixed</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Designated Tx Mem....</td> <td>Talkback</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Mem	Zn	Chn	Zone	Channel	Scan Type.....Priority Mon	1	1	1	21	1C-IA-1	Trunking System ID.....1-1000	2					Trunking System Type.....II/III	3					Priority 1 Type.....Fixed	4					Priority 1 Member.....None	5					Priority 2 Type.....Fixed	6					Priority 2 Member.....None	7					NonPriority Members.....Fixed	8					Designated Tx Mem....	Talkback				
	Mem	Zn	Chn	Zone	Channel																																																								
Scan Type.....Priority Mon	1	1	1	21	1C-IA-1																																																								
Trunking System ID.....1-1000	2																																																												
Trunking System Type.....II/III	3																																																												
Priority 1 Type.....Fixed	4																																																												
Priority 1 Member.....None	5																																																												
Priority 2 Type.....Fixed	6																																																												
Priority 2 Member.....None	7																																																												
NonPriority Members.....Fixed	8																																																												
Designated Tx Mem....	Talkback																																																												
F1 HELP	F2 ADD LIST	F3 PREV LIST	F4 NEXT LIST	F5 DELETE LIST	F6 DELETE MEMBER	F7	F8 SCAN OPTIONS	F9	F10 EXIT																																																				

This screen is used to configure the Channel Scan feature and to enter the scan list. Each personality selects a scan list by choosing the scan list number. Both Conventional and Trunking personalities may use these scan lists by choosing the appropriate scan list number on the CONVENTIONAL AND TRUNKING PERSONALITY screens. *However, the scan list type must be compatible with the capability of the personality.* For instance, a Conventional personality cannot choose a Trunking Type II list.

**Note:** All systems, personalities and zone/channel assignments must be programmed before you attempt to create a scan list.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, Use the UP/DOWN arrow keys to select the desired choice or value. Use the **PgUp/PgDn** keys to view additional pages of the scan list if any.

### Function Key Descriptions

- |                           |   |
|---------------------------|---|
| <b>F2 - ADD LIST</b>      | Adds a scan list. You may have up to 20 scan lists.   |
| <b>F3 - PREV LIST</b>     | Displays information for the previous scan list.  |
| <b>F4 - NEXT LIST</b>     | Displays information for the next scan list.  |
| <b>F5 - DELETE LIST</b>   | Delete the current scan list.   |
| <b>F6 - DELETE MEMBER</b> | Deletes the currently highlighted member from the scan list.  |
| <b>F8 - SCAN OPTIONS</b>  | Brings up the SCAN OPTIONS screen where you will be able to customize the Channel Scan feature for specific applications. |

## Field Definitions

### Scan List

Use the UP/DOWN arrow keys to select the desired scan list, or use the **F3/F4** function keys to scroll through the lists. Each mode has a unique scan list. Each Conventional and Trunking personality may have a unique scan list. The scan lists defined on this screen can be assigned to the desired personalities on the CONVENTIONAL and TRUNKING PERSONALITY screens. Lists may be added by pressing the **F2** key and the currently highlighted list can be deleted using the **F5** key.

### Scan Type

Use the UP/DOWN arrow keys to select the type of scan list. The choices are:

Conventional	May contain only Conventional personalities (up to 15 members).
Talkgroup	May contain both Conventional and Trunking personalities from different systems. May be used for Trunking Type I or Trunking Type II operation (up to 10 members).
Priority Mon(itor)	May contain only Trunking personalities from the same Type II system (up to 10 members). <i>If the SMARTNET Type I feature has been purchased, this type may contain Trunking personalities from the same Type I system (up to 10 members).</i>

### Trunking System ID

*This field is visible only if the Scan Type field is set to Priority Monitor.* Use the UP/DOWN arrow keys to select the specific Trunking system this scan list is to use. The system ID will be shown according to system number.

**Note:** *The Trunking system should be set up on the TRUNKING SYSTEM screen (**F4/F4/F3**) before scan list information is entered since some of these fields depend on Trunking system information.*

### Trunking System Type

*This field is read-only and is visible only if the Scan Type field is set to Priority Monitor.* The value in this field is derived from settings in the TRUNKING SYSTEM screen (**F4/F4/F3**). Displays the Trunking system type, either I or II/III.

### Dynamic Priority (*not shown*)

*This field will be visible only if Scan Type is set to Conventional. When this feature is enabled, the Priority 2 Type field will not be visible.* Use the UP/DOWN arrow keys to enable/disable Dynamic Priority. If this feature is enabled, the last channel transmitted on will become (and remain) the Second Priority Channel until a new channel is transmitted on or scan is disabled. The priority of the First Priority channel will not be affected.

Priority 1 Type &  
Priority 2 Type

*This field is visible only if the Scan Type field is set to Conventional or Priority Monitor. Use the UP/DOWN arrow keys to select the type of Priority Scan the radio will use from among the following:*

Selected Chan	The radio will use the last selected channel as the Priority Member. First priority and second priority may not both refer to the selected channel.
Fixed	The radio uses a selected member of the scan list, set from the RSS, as the Priority Channel. <i>This member is fixed and cannot be programmed from the radio.</i>
OP/SEL (Operator Selectable)	The radio uses a selected member of the scan list as the Priority Channel. The user must select the member of the scan list to be used as the priority member. <i>This member can be programmed both from the RSS and the radio.</i>
Disabled	No Priority Channel will be allowed.

Priority 1 Member

*This field is visible only when the Priority 1 Type field is set to Fixed or OP/SEL. Use the UP/DOWN arrow keys to select the Scan member which has First Priority in scan selection. The channel number may also be entered directly. When assigned, the Priority 1 Member is typically Member 1 in the Scan List. Select None for no First Priority channel.*

**Note:** The member selections for Priority 1 Member and Priority 2 Member must be different.

Priority 2 Member

*This field is visible only when the Priority 2 Type field is set to Fixed or OP/SEL. Use the UP/DOWN arrow keys to select the Scan Member which has Second Priority in scan selection. Select None for no Second Priority channel.*

**Note:** The member selections for Priority 1 Member and Priority 2 Member must be different.

Non-Priority Members

Use the UP/DOWN arrow keys to select the non-priority scan type from among the following:

Fixed	The radio uses a selected member of the scan list configured from the RSS as the non-priority channel. <i>This member is fixed in that it can be programmed from the RSS but not from the radio.</i>
OP/SEL (Operator Selectable)	The radio uses a selected member of the scan list as the non-priority member. <i>This member can be programmed from both the RSS and the radio.</i>

Designated Tx Mem

Use the UP/DOWN arrow keys to select the Designated Transmit Talkback channel for scan operation. For Conventional scan lists, this may be the number of the scan member which will serve as the designated transmit channel during scan operation. Enter the number of the scan member to have a fixed channel. *This channel may NOT be a receive-only channel.* The other options are:

Selected Chan	The radio will transmit on the last channel selected by the user.
Talkback	The radio will transmit on the same channel that the scanner stopped on.

**Note:** *If the channel is a receive-only channel, the radio will issue a warning to inform you that transmission is not possible.*

Zn

Use the UP/DOWN arrow keys to select the Zone (or System) for this member of the scan list. The Zone (System) name from the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**) will be shown to the right.

Chn

Use the UP/DOWN arrow keys to select the Channel (or Subfleet) for this member of the scan list. The Zone (System) name from the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**) will be shown to the right.

**Note:** If the field displays “??”, an invalid channel condition exists.

## Radio Wide Scan Options

# D C E H

From the MAIN MENU, press **F4**, **F3**, **F5** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Choice.				
MAIN:CHANGE/VIEW:CONFIG:SCAN:OPTIONS									
SCAN OPTIONS -----									
RADIO WIDE -----					CONVENTIONAL -----				
Nuisance Mode Delete.....Enabled					Carrier Detect Required....Enabled				
Priority Scan Alert.....Enabled					Priority Chan Marking..... Enabled				
Rx/Tx Hold Time (sec).....3					Monitor Hold Time (sec).....6				
HUB Suspends Scan.....Enabled					Time Between Pri Samples (ms).6325				
TRUNKING -----									
					Failsoft Hold Time (sec).....6				
					System Search Time (sec).....1				
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

This screen is used to customize the Channel Scan feature for specific applications. Options and parameters that affect Radio wide, Conventional and Trunking operations are available. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

#### Nuisance Mode Delete

Use the UP/DOWN arrow keys to enable/disable this feature. The Nuisance Mode Delete setting allows the user to temporarily delete from the scan list all non-priority channels that are constantly busy. Such activity may cause the radio to be constantly locked onto a channel.

**Note:** A channel deleted using this option will remain deleted until scan is turned off. When scan is turned on, all channels that were previously deleted will be replaced.

#### Priority Scan Alert

Use the UP/DOWN arrow keys to enable/disable this feature. If this option is enabled, the radio will audibly alert you in one of two ways described below when it unmutes on a priority channel while scanning:

- One beep is generated for the priority talkgroup/subfleet in a Trunked scan list or for the first priority channel in a Conventional scan list.
- Two beeps are generated for the second priority channel in a Conventional scan list.

#### Rx/Tx Hold Time (sec)

Use the UP/DOWN arrow keys to select the amount of time the radio will remain on a channel after a message has been received/transmitted before it begins scanning again. Valid entries range from 0 (zero) to 255 seconds in one-second increments.

HUB Suspends Scan	Use the UP/DOWN arrow keys to enable/disable HUB Suspends Scan which determines whether or not scan operation will be suspended while the microphone is removed from the hang-up box. This will allow the user to complete a conversation while scan is suspended. <i>For Portables, this option is applicable only when a Vehicular Adapter is used.</i>
Carrier Detect Required	Use the UP/DOWN arrow keys to enable/disable this feature. When this option is enabled, the radio will stop scanning and operate on the priority channels based on carrier squelch detect. But it will unmute only on the standard signalling conditions programmed for that channel.
Priority Chan Marking	Use the UP/DOWN arrow keys to enable/disable this feature. When this option is enabled and the radio is in Priority Scan mode, the radio checks the channel for activity and proper PL. If the channel has Carrier but the wrong PL or no PL, the channel is marked so that the radio will not check a second time for the proper PL. The radio will not unmute on this channel until carrier is dropped. This is done to eliminate time spent checking for proper PL and thus minimize audio holes.  <i><b>Note:</b> Care should be exercised in using this feature. There is the possibility that messages could be missed especially if long repeater hangtimes are used.</i>
Time Between Pri Samples (ms)	This field represents the time interval that the radio waits between taking samples of the priority channel in the scan list. This value is only applicable during conventional priority scanning. The range is from 250ms to 6375 ms in increments of 25 ms. The factory default is 500 ms for Portables and 550 ms for mobiles.
Monitor Hold Time (sec)	Use the UP/DOWN arrow keys to select the Monitor Hold Time. Scan Monitor Hold time is the time the radio remains on a designated transmit conventional channel during scan after the monitor button has been released. Valid entries range from 0 (zero) to 255 seconds in one-second increments.
Failsoft Hold Time (sec)	Use the UP/DOWN arrow keys to select Trunking Failsoft Activity Time. This value determines how long the radio will stay unmuted on a failsoft channel if failsoft is found while in talkgroup scan. Valid values range from 1 to 255 seconds in one-second increments. You may also select Disabled.
System Search Time (sec)	<i>This timer applies only to systems which do not employ the scan marker feature.</i> Use the UP/DOWN arrow keys to select the desired Trunk Activity Search Time. This timer determines how long the radio will stay on the control channel searching for voice activity before scanning the next system. Valid entries range from 0 (zero) to 255 seconds in one-second increments.

# Radio Wide Display Options

## DC F

From the MAIN MENU, press **F4**, **F3** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Enter or Scroll to Select Value.				
MAIN:CHANGE/VIEW:CONFIG:DISP DATA									
RADIO WIDE DISPLAY OPTIONS -----									
Text Justification.....Left	Alt Display Time (ms).....1000	Channel Text Size.....3	Temp Msg Display Time (ms)...1000	Zone Text Size.....5	Display Light Time (ms).....15	Slow Scroll Delay (ms).....1000	Auto Light.....Enabled	Emergency Receive.....Enabled	Display Sys/Sub.....Disabled
Fast Scroll Delay (ms).....250	Radio Lock .....Enabled	Slow Scroll Count.....3	Mandatory Password.....Disabled	Save Dim State.....Disabled	Max Password Length.....8	Talkgroup	Password.....	Display On Mode Change....Disabled	
Display On Receive.....Disabled		Display On PTT.....Disabled							
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP						PTT			EXIT
						ID			

*This screen can be accessed only for radios that have a display. This screen permits modifications to display options to customize the radio to specific user applications. The features and options shown here apply to all systems and personalities.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F7 - PTT ID** Brings up a screen from which you can program parameters associated with the Digital ID display feature.

### Field Definitions

**Text Justification** Use the UP/DOWN arrow keys to select either left or right Text Justification. This option applies to Channel and Zone names, Phone aliases, Private Call List aliases, Call Alert aliases, Status aliases and Message aliases that appear on the radio's display.

**Channel Text Size** Use the UP/DOWN arrow keys to select the Channel (Subfleet) Text Size. The Channel Text size will vary inversely with the Zone (System) Text size since both must be displayed at the same time. Valid entries range from 1 to 14 characters in length *depending on the radio model*.

**Zone Text Size** *This is a read-only field.* The value in this field is automatically calculated based on the value you specified in the Channel Text field. This is because both must Channel and Zone Text must be displayed at the same time. Valid entries are 0 (zero) to 13 characters in length *depending on the radio model*.

Slow Scroll Delay (ms)	<p>Use the UP/DOWN arrow keys to select the Slow Scroll Delay, the rate at which the display will slow scroll through a list before it begins to fast scroll. Valid entries range from 250 to 6250 ms in 250-ms increments.</p> <p><b>Note:</b> The Slow Scroll Rate should be greater than or equal to Fast Scroll Rate but less than or equal to 6250 (that is, <math>250 \leq \text{Fast Scroll Rate} \leq \text{Slow Scroll Rate} \leq 6250</math>).</p>
Fast Scroll Delay (ms)	<p>Use the UP/DOWN arrow keys to select the Fast Scroll Delay, the rate at which the display will fast scroll through a list. The radio will first slow scroll and then fast scroll after the slow scroll count expires. Valid entries range from 250 to 6250 ms in 250-ms increments.</p> <p><b>Note:</b> The Fast Scroll Rate should be greater than or equal to 250 but less than or equal to Slow Scroll Rate (that is, <math>250 \leq \text{Fast Scroll Rate} \leq \text{Slow Scroll Rate} \leq 6250</math>).</p>
Slow Scroll Count	<p>Use the UP/DOWN arrow keys to select the number of menus to be scrolled before the radio switches to the Fast Scroll Rate. Valid entries range from 0 (zero) to 255.</p>
Codeplug Display	<p><i>This field will be visible for Mobiles only.</i> Use the UP/DOWN arrow keys to enable/disable this option. If this field is enabled, it implies that at least one codeplug display exists.</p>
Save Dim State	<p><i>This field will be visible for Mobiles only.</i> Use the UP/DOWN arrow keys to enable/disable this option. If this field is enabled, the display brightness setting will to be saved to the EEPROM for use during power-up initialization.</p>
Display On Mode Change	<p>When this field is enabled, the Talkgroup Alias or the Talkgroup ID will be displayed upon channel change. If the Talkgroup Alias feature has been enabled on the ASTRO Conventional Talkgroups screen (<b>F4/F6/F5/F6</b>), then the Talkgroup Alias will be displayed. Otherwise, the Talkgroup ID will be displayed.</p> <p>Enabling this field will take precedence over the setting of the Display On Mode Change field on the More Multikey Parameters screen (<b>F4/F3/F2/F6/F6</b>). The factory default is Disabled. <i>This field is only visible for radios equipped with CAI (Common Air Interface) Digital Operation.</i></p>
Display On Receive	<p>When this field is enabled, the Talkgroup Alias or the Talkgroup ID will be displayed upon unmuting a call. If the Talkgroup Alias feature has been enabled on the ASTRO Conventional Talkgroups screen (<b>F4/F6/F5/F6</b>), then the Talkgroup Alias will be displayed. Otherwise, the Talkgroup ID will be displayed.</p> <p>Enabling this field will take precedence over the setting of the Display On Mode Change field on the More Multikey Parameters screen (<b>F4/F3/F2/F6/F6</b>). The factory default is Disabled.</p> <p><b>Note:</b> This field is only visible for radios equipped with CAI (Common Air Interface) Digital Operation.</p>
Display On Receive	<p>When this field is enabled, the Talkgroup Alias or the Talkgroup ID will be displayed when the PTT button is pressed. If the Talkgroup Alias</p>

feature has been enabled on the ASTRO Conventional Talkgroups screen (**F4/F6/F5/F6**), then the Talkgroup Alias will be displayed. Otherwise, the Talkgroup ID will be displayed.

**Note:** This field is only visible for radios equipped with CAI (Common Air Interface) Digital Operation.

Enabling this field will take precedence over the setting of the Display On Mode Change field on the More Multikey Parameters screen (**F4/F3/F2/F6/F6**). The factory default is Disabled.

Alt Display Time (ms)

Use the UP/DOWN arrow keys to select the length of time that an alternate message will be displayed. Valid entries range from 250 to 6250 ms in 250-ms increments.

Temp Msg Display Time (ms)

Use the UP/DOWN arrow keys to select the length of time that a temporary message will be displayed. Valid entries range from 250 to 6250 ms in 250-ms increments.

Display Light Time (sec)

*This field will be visible for Portables only.* Use the UP/DOWN arrow to specify the Display Light Time and/or the Rotary Light Time (*for XTS 3000 models only*). You can also enter a value directly.

*For ASTRO SABER radios*, this is the duration for which the radio display will be illuminated. *For ASTRO XTS 3000 models*, the Rotary Light Time (**F4/F3/F2/F9**) will be automatically adjusted to match the selection for Display Light Time.

Valid entries range from five to 60 seconds in five-second increments. A value of Infinite is also available (that is, the light will remain on until the Light button is pressed again).

Auto Light	<p><i>This field will be visible for Portables only.</i> If this feature is enabled, the display will light up each time a button or key is pressed (except for PTT). For ASTRO XTS 3000 models, the Auto Rotary Light (<b>F4/F3/F2/F9</b>) will be automatically adjusted to match your selection for this Auto Light. This in effect results in synchronized behavior between the display light and the XTS 3000 Rotary knob lighting. The light will time out and again automatically shut off based on the setting of the associated Light Time feature.</p>
Emergency Receive	<p><i>This feature is not compatible with Silent Emergency. To enable the Emergency Receive feature on this screen, Silent Alarm must be disabled (<b>F4/F3/F2/F7</b>). Use the UP/DOWN arrow keys to enable/disable the Emergency Receive Display option. If this feature is enabled, the radio display will alternate between Emergency Receive and the current channel when it unmutes on an emergency call. For six-character display models, "EMGRCV" will be displayed.</i></p> <p><b>Note:</b> <i>Emergency must be enabled on each Conventional MDC SYSTEMS screen (<b>F4/F6/F4/F3</b>), Conventional ASTRO SYSTEMS screen (<b>F4/F6/F5/F3</b>), and/or EMERGENCY DATA CONFIGURATION screen (<b>F4/F4/F4/F8</b>) if your radio supports the emergency feature.</i></p>
Display Sys/Sub	<p><i>This field is applicable to Portables only.</i> Use the UP/DOWN arrow keys to enable Sys/Sub mnemonics to be displayed on the radio menu instead of Zone/Chan. This feature permits customization of Trunking applications to minimize user training.</p>
Radio Lock	<p><i>This field is visible for Portables only.</i> Use the UP/DOWN arrow keys to enable/disable this feature. When this field is enabled, the user will be required to enter the Radio Lock Password on power-up before using the radio. For Secure hardware equipped radios, this password must be 6 to 8 characters in length.</p>
Mandatory Password	<p><i>This field is visible for Portables only.</i> Use the UP/DOWN arrow keys to enable/disable this feature. When this field is enabled, the user must enter a password each time the radio is turned on. If this option is disabled, the user may avoid entering a password by changing it to NULL. (Refer to the Radio Operator's Manual for details.)</p>
Maximum Password Length	<p><i>This field will be visible for Portables only and if the Radio Lock field on this screen is set to Enabled.</i> This is the maximum length of a password for the radio. The radio uses this value only when the password function is enabled on the menu. Valid entries range from 1 to 8 characters.</p>
Password	<p><i>This field will be visible for Portables only and if the Radio Lock field on this screen is set to Enabled.</i> Enter the numeric password directly. The password is the numeric value which must be entered when the radio is turned on (if the Radio Lock feature on this screen is enabled).</p>

# PTT-ID Display Options

## D C F G

From the MAIN MENU, press **F4**, **F3**, **F6** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter or Scroll to Select Value.								
...CONFIG:DISP DATA:PTT ID DISPLAY									
PTT-ID DISPLAY OPTIONS -----									
ID Display.....Enabled	<u>Prefix</u>								
Scan ID Display.....Disabled	ID ID								
End of Voice Timer (sec).....0	Emergency EM								
Manual Channel Change Timer (sec).1	Call Alert CA								
Number of Prefix Characters.....4									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen permits modifications to display options to customize the radio to specific user applications. The features and options shown here apply to all systems and personalities.

### Field Definitions

#### ID Display

Use the UP/DOWN arrows to enable/disable ID Display. If this feature is enabled, alphanumeric text (ID) uniquely identifying the transmitting radio will appear on the radio display.

#### Scan ID Display

Use the UP/DOWN arrows to enable/disable Scan ID Display. If this feature is enabled, alphanumeric text (ID) uniquely identifying the active radio on a channel will appear on the radio display while scanning.

#### End of Voice Timer (sec)

Use the UP/DOWN arrows, or directly enter the desired value. This field is used to set the time period that the PTT-ID will be displayed after a transmission is received and has been terminated. The valid range is 0 (zero) to 7 seconds.

#### Manual Channel Change Timer (sec)

Use the UP/DOWN arrows, or enter the desired value directly. This field is used to set the time period that the PTT-ID is inhibited after a manual change of the channel. The valid range is 0 (zero) to 7 seconds.

#### Number of Prefix Characters

This is the number of prefix characters for the incoming IDs associated with PTT-ID, Emergency and Call Alert messages from the from the calling party. The number of prefix characters are as follows: 1 to 6 characters (ASTRO Mobiles), 1 to 6 characters (ASTRO SABER models), and 1 to 4 characters (ASTRO XTS 3000 models).

#### Prefix

Enter the ID type prefix is what is displayed prior to the ID number. The ID type prefix can be up to 6 alphanumeric characters. This is determined by the Number of Prefix Characters field. Valid choices are CA for Call Alert, EM (for Emergency) and ID (for Identification).

# Alarm Options (Mobiles Only)

## D C G

From the MAIN MENU, press **F4**, **F3**, and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
MAIN:CHANGE/VIEW:CONFIG:ALARM OPTIONS									
ALARM OPTIONS ----- Horn And Lights.....Enabled Permanent Horn & Lights...Enabled Two Alarm Option.....Disabled Alarm Type.....Lights Alarm Rearm Option..... Enabled Ext Alarm Delay (Sec).....7 Horn Duration (Sec).....4 Lights Duration (Sec).....60									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### Mobiles Only

The ALARM OPTIONS screen is used to program and enable/disable Horn and Light features. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

Horn and Lights

Use the UP/DOWN arrow keys to enable/disable the radio's Horn and Lights Alarm.

Permanent Horn & Lights

*This field will be visible only if the Horn and Lights option is enabled.* Use the UP/DOWN arrow keys to enable/disable this option. If this feature is enabled, there will be no repetitive Horn and Lights display and the radio will power up with alarm armed.

Two Alarm Option

*This field will be visible only if the Horn and Lights option is enabled.* Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, two alarms (Horn and Lights) are activated when the alarm is triggered. If this feature is disabled, only one alarm (Horns or Lights) will be activated when the alarm is triggered. The Alarm Type field determines which alarm is used. There is no menu on the radio that will allow the user to choose between different alarm types.

Alarm Type

*This field will be visible only when the Two-Alarm feature is Disabled.* Use the UP/DOWN arrow keys to choose from the following options:

Horn	The horn alone is turned on when the alarm is activated.
Lights	The lights alone are turned on when the alarm is activated.

Alarm Rearm Option

*This field will be visible only if the Horn and Lights option is enabled.* Use the UP/DOWN arrow keys to enable/disable this option. If this option is enabled, Horn and Lights will remain armed even after the user responds to a call. In this case, the only way to disarm Horn and Lights

is by pressing the radio's H/L button. If this option is disabled, the alarm is disarmed on receipt of an incoming call.

Ext Alarm Delay (sec)

*This field will be visible only if the Horn and Lights option is enabled.* Enter the desired value for the time delay before Horn and Lights are activated. The valid range is 0 (zero) to 15 seconds.

Horn Duration (sec)

*This field will be visible only if the Horn and Lights option is enabled.* Enter a desired value for the maximum length of time the horn will stay on before the user responds to a call. Valid values range from 1 to 255. A value of Infinite is also available.

Lights Duration (sec)

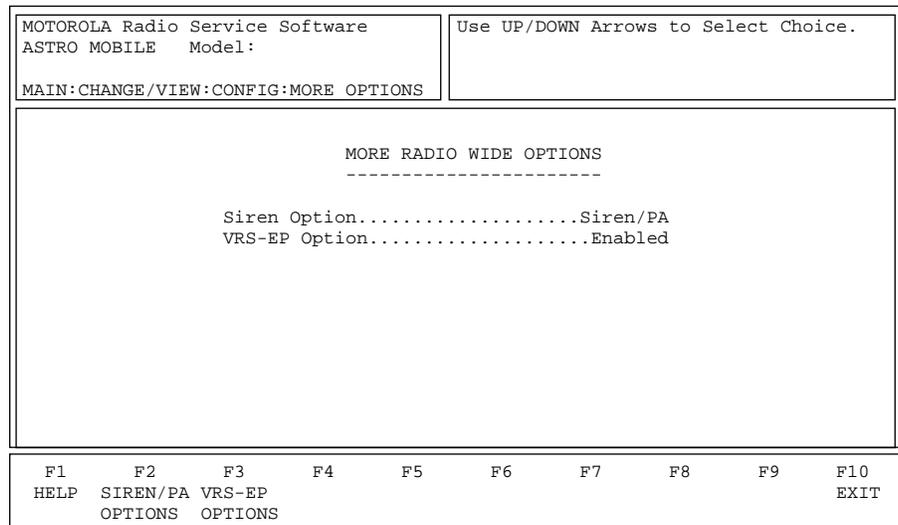
*This field will be visible only if the Horn and Lights option is enabled.* Enter a desired value for the maximum length of time the light will stay on before the user responds to a call. Valid values range from 1 to 255. A value of Infinite is also available.

# Notes

# More Radio Wide Options (*Mobiles Only*)

## D C I

From the MAIN MENU, press **F4**, **F3**, and then **F9** to access this screen.



### *Mobiles Only*

The MORE RADIO WIDE OPTIONS screen is used to enable additional radio wide options and access the corresponding option configuration screens. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

- F2 - SIREN/PA OPTIONS** *This function will be visible only if the Siren/PA Option field is set to a value other than Disabled. Brings up a screen from which you can program parameters associated with the Siren/PA option.*
- F3 - VRS-EP OPTIONS** *This function will be visible only if the VRS-EP Option field is set to Enabled. Brings up a screen from which you can program parameters associated with the VRS-EP feature.*

## Field Definitions

**Siren Option** *The Siren/PA hardware option must be purchased for Siren/PA operation. Use the UP/DOWN arrows and select the desired functionality.*

PA Only	Only the parameters for the Public Address option will be displayed on the SIREN AND PA OPTIONS screen ( <b>F4/F3/F9/F2</b> ).
Siren/PA	All the Siren/PA options will be displayed on the SIREN AND PA OPTIONS screen ( <b>F4/F3/F9/F2</b> ).

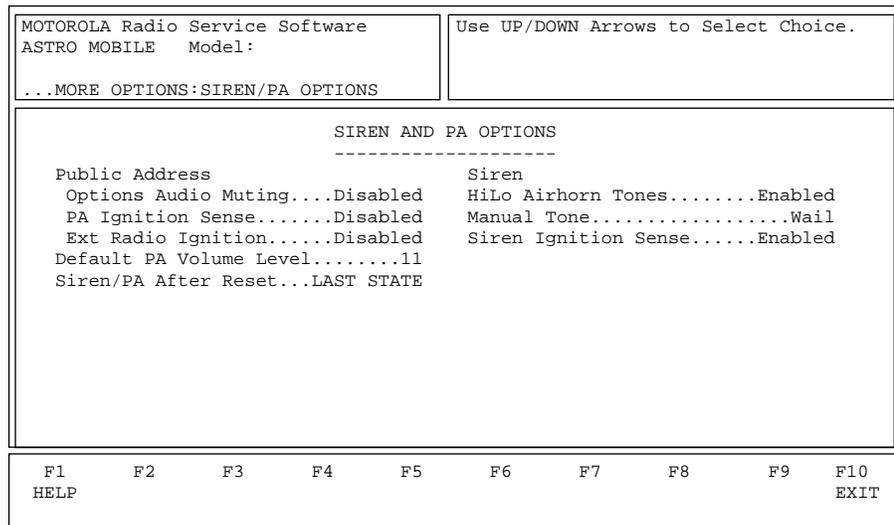
A value of Disabled is also available.

**VRS-EP Option** Use the UP/DOWN arrow keys to enable/disable Vehicular Repeater System—Expanded Protocol (VRS-EP) operation. The VRS-EP unit is hardware equipment which can be attached to an ASTRO mobile radio. It converts the vehicle with the radio into a mobile repeater system at the push of a button. VRS-EP operation allows the operation of portable radios in a region outside the signal range of the base station.

Siren and PA Options (*Mobiles Only*)

DCIB

From the MAIN MENU, press **F4**, **F3**, **F9** and then **F2** to access this screen.



This screen allows further customizing of the Siren/PA option. *Siren/PA hardware must be attached to the radio for these parameters to have any affect.* Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

Field Definitions

Options Audio Muting

Use the UP/DOWN arrow keys to enable/disable this feature. If this field is set to Enabled, option audio will not be heard over the Public Address (PA). This is to prevent deciphered SECURENET audio and Mobile Voice Storage message playback audio from being heard on the siren speaker outside the vehicle when in External Radio Mode.

If this feature is disabled, the audio from any options in the system will be heard on the siren speaker outside the vehicle when in External Radio Mode. This is in addition to normal audio.

PA Ignition Sense

Use the UP/DOWN arrow keys to enable/disable this feature. If PA Ignition Sense is set to Enabled, the Public Address (excluding External Radio Mode) will cease to operate when the vehicle ignition is turned off. When this feature is disabled, the operator can use the Public Address system whether the vehicle's ignition is On or Off.

Ext Radio Ignition

Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the Public Address External Radio Mode will cease to operate when the vehicle ignition is turned off. When this feature is disabled and Public Address is in the External Radio Mode, the received audio will be broadcasted over the Siren speaker independent of the vehicle's ignition state.

Default PA Volume Level

This field contains the default Public Address system volume level.

Siren PA After Reset

Use the UP/DOWN arrow keys to make your selection from among the following:

Off	The Siren will be in a switched off state when the radio is turned on.
Last State	When the radio is turned on, the siren will return to its previous state. That is, if the Siren was on when the radio was turned off, the Siren will be on. If the Siren was off when the radio was turned off, the Siren will be off.

HiLo Airhorn Tones

Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, HiLo and/or Airhorn tones are allowed. When this feature is disabled, HiLo and/or Airhorn Siren tones cannot be produced. In this state (disabled),

- Pressing the HiLo button will not create a HiLo tone; and
- Automatic Yelp will not override to the Airhorn mode when Horn Ring is pressed.

This feature allows HiLo and Airhorn tones to be disabled for applications in which they are not desired or allowed.

Manual Tone

Use the UP/DOWN arrow keys to make your selection.

Airhorn	An Airhorn tone will be heard when the horn ring is pressed.
Wail	A Wail tone will be heard when the horn ring is pressed.
Yelp	A Yelp tone will be heard when the horn ring is pressed.

Siren Ignition Sense

Use the UP/DOWN arrow keys to enable/disable this feature. When the Siren Ignition Sense is enabled, the Siren will cease to operate when the vehicle's ignition is turned off. When the Siren Ignition Sense is disabled, the operator can use the Siren whether the vehicle's ignition is on or off.

## VRS Options (Mobiles Only)

# DCIC

From the MAIN MENU, press **F4**, **F3**, **F9** and then **F3** to access this screen.

MOTOROLA Radio Service Software					Use UP/DOWN Arrows to Select Choice.				
ASTRO MOBILE Model:									
...CONFIG:MORE OPTIONS:VRS-EP OPTIONS									
VRS-EP OPTIONS									
-----									
Conventional Options					Radio-Wide Options				
Mobile Detector.....Disabled					Base Repeater.....Disabled				
Repeat Mode..Mobile Audio Repeat					VIP Control of VRS.....Disabled				
Access Ack & TOT Tones...Enabled					VIP Logic.....Active Open				
Trunking Access Tones.....Disabled					TOT Duration (sec).....Infinite				
In Car Monitor (ICM) Option					Singleton Freq (Hz).....847.5				
In Car Monitor Default.....Both					VRS Tx Squelch Type.....TPL				
Operator Select ICM.....Disabled					VRS Tx PL Freq.....67.0 Hz XZ				
Portable Priority Interrupt (PPI)					Tx PL Forwarding.....Disabled				
ICM PPI.....Disabled					Mode Steering.....Disabled				
Repeater PPI.....Enabled					Access PL Freq.....69.3 Hz WZ				
Conv PPI Timing (sec).....Slow					Crystal Pull.....Disabled				
Trunked PPI Timing (ms)...Fast									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP									EXIT

### Mobiles Only

This screen allows you to view/edit some of the Vehicular Repeater System (VRS) options on a radio-wide basis. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F7 - MODE STEERING**  
(not shown)

*This function will be visible only if the Mode Steering field on this screen is set to Enabled. Brings up a screen from which you can view/edit all of the Vehicular Repeater System—Expanded Protocol (VRS-EP) steering modes that can be found in a VRS-EP system.*

### Field Definitions

Mobile Detector

*In this version, you will NOT be able to change the setting for the Vehicular Repeater System—Expanded Protocol (VRS-EP) Mobile Detector option. This option is needed when the mobile radio is to be used on a non-repeater dispatch system. It is not required if a site repeater is being used.*

## Repeat Mode

*In this version, you will NOT be able to change the setting for the VRS-EP Repeat Mode feature.* The Repeat Mode option indicates the manner in which the VRS-EP will repeat or re-transmit signals to the portable radios within the area of operation. Where more than one VRS-EP unit will be involved (Multi-unit VRS-EP operation), all participating units must be programmed with the same Repeat Mode. The available settings for this feature are:

Mobile Audio Repeat	The VRS-EP repeats any signal received and heard on the mobile radio. The user of the mobile radio may turn on the radio monitor to allow incoming base signals with any PL tone or DPL code to be heard by the portable radio users in the area. Turning the monitor off will prevent all base-to-portable signals from being heard unless the mobile radio's coded squelch (PL/DPL) requirements are met. Note that taking the mic off the radio HUB (Hang-Up Box) will have an effect on the radio similar to that of an activated monitor.
Mobile PL Decode	The VRS-EP repeats base-to-portable transmissions only when the signal includes the correct PL tone or DPL code regardless of what is heard on the mobile speaker. For correct operation, PL or DPL must be programmed on the mobile modes for which base-to-portable signal repeats are to be regulated in this manner.

## Access Ack and TOT Tones

Use the UP/DOWN arrow keys to enable/disable the Vehicular Repeater System—Expanded Protocol (VRS-EP) Access Ack and Time-Out-Timer (TOT) Tones. If this option is enabled, the VRS-EP unit will transmit a high-pitch tone after it has successfully received a message that can be repeated from a portable unit. This tone is sent to the portable radio and is heard by the user of that radio. If the transmission is not successfully completed before the Time-Out Timer (TOT) expires, a lower pitch tone will be heard instead.

**Note:** The user of a portable may not hear either tone after completing a transmission if the user happens to be out of the range of the VRS-EP unit.

If this option is disabled, the user of the portable radio will not get any acknowledgment tones of either successful or unsuccessful transmissions.

## Trunking Access Tones

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the Vehicular Repeater System—Expanded Protocol (VRS-EP) unit will transmit a high-pitched tone after successfully receiving a repeatable message from a portable unit. This tone will be sent to the portable radio and will be heard by the user of that radio. If the transmission could not be successfully completed for some reason, a low-pitch tone will be heard instead. If this field is disabled, the tones described above will not be heard.

**Note:** *Even if this feature is enabled, these tones will not be heard if the portable radio is out of range of the VRS-EP unit.* However, this feature will not affect Talk Permit, Talk Prohibit and System Busy tones. These tones are constantly active and will be heard by the user of the portable radio.

In Car Monitor Default

*In this version, you will NOT be able to change the setting for this feature.* The In-Car Monitor (ICM) Default feature allows the selection of an operational mode for use in Vehicular Repeater System—Expanded Protocol (VRS-EP) activities during which a party remains in the vehicle. In such activities, the user who remains in the vehicle with the VRS-EP is given a certain set of transmission capabilities depending on the ICM Default selection. Valid options for this feature are as follows:

Base	Allows the mobile radio to transmit (when the PTT button is pressed) on the frequency corresponding to the mode on the control head's display. This transmission will not be heard by the user of the portable radio.
Port	Allows the user of the mobile radio to transmit to the portables in the area of operation, but not to the base. <i>The VRS-EP Tx PL frequency option must be set to match the portables' receive PL frequency.</i> If the mobile radio's PTT button is pressed during an on-going portable-to-base activity, the attempted transmission is blocked, resulting in an audible talk-prohibit tone on the mobile radio.
Both	Allows the mobile radio to transmit on the frequency corresponding to the mode on the control head's display and the portable frequency simultaneously. <i>The VRS-EP Tx PL Frequency option must be set identical to the portable unit's Receive PL Frequency.</i> Again, if the mobile radio's PTT button is pressed during an on-going portable-to-base activity, the attempted transmission is blocked and an audible talk prohibit tone is heard on the mobile radio.

Operator Select ICM

*In this version, you will NOT be able to change the setting for this feature.* Use the UP/DOWN arrow keys to enable/disable the Vehicular Repeater System—Expanded Protocol (VRS-EP) Operator Select ICM feature.

This feature allows the user of the mobile radio to change the ICM setting by entering into a radio configuration state. When the Operator Select ICM feature is enabled, an extended press of the VRS-EP button puts the radio into this ICM configuration state. The ICM types can then be browsed using the radio's Mode Up/Down buttons. The desired ICM may be locked in with a press of the Home button.

ICM PPI

*In this version, you will NOT be able to change the setting for this feature.* Use the UP/DOWN arrow keys to enable/disable the In Car Monitor Portable Priority Interrupt (ICM PPI) option. If this option is enabled, portable-to-base transmissions take priority over mobile radio transmissions. The user of a portable radio will be able to transmit even if the mobile radio was previously keyed up and was in use by a party remaining in the vehicle.

Repeater PPI

Use the UP/DOWN arrow keys to enable/disable the Repeater Portable Priority Interrupt (Repeater PPI) option. The Repeater PPI option, when enabled, causes any on-going transmissions from base to the portables to be interrupted if any portable radio user keys up. This option should be enabled if it is desirable that all portable unit operators be able to break into base station transmissions. A clicking sound heard on the portable radios is normal and unavoidable with Repeater PPI operation.

Conv PPI Timing (sec)	<p>Use the UP/DOWN arrow keys to select the Conventional Portable Priority Interrupt (Conv PPI) value. The Conv PPI Timing value indicates how frequently the Vehicular Repeater System—Expanded Protocol (VRS-EP) searches for possible Repeater Portable Priority interruptions on a Conventional Mode.</p> <p>During Conventional PPI operation, the VRS-EP will quickly ‘listen’ for possible portable radio activity during any transmission originating from the base. This on and off monitoring action will occur more frequently than with a PPI timing selection of “Fast” than with a selection of “Slow”.</p> <p>At either setting, the signal coming through from base is interrupted and the portable transmission picked up if such portable activity is detected. This implies that the transmission coming through from the base is interrupted only if a portable user happens to key up for some reason.</p>
Trunked PPI Timing (ms)	<p>Use the UP/DOWN arrow keys to select the Trunked Portable Priority Interrupt (Trunked PPI) Timing value. The Trunked PPI Timing setting indicates how frequently the Vehicular Repeater System—Expanded Protocol (VRS-EP) searches for possible Repeater Portable Priority interruptions on a Trunking Mode.</p> <p>During Trunking PPI operation, the VRS-EP will quickly ‘listen’ for possible portable radio activity during any transmission originating from the base. This on and off monitoring action will occur more frequently with a PPI Timing selection of “Fast” than with a selection of “Slow”. At either setting, the signal coming through from base is interrupted and the portable transmission picked up if such portable activity is detected. This implies that the transmission coming through from the base is interrupted only if a portable user happens to key up for some reason.</p>
Base Repeater	<p>Use the UP/DOWN arrow keys to enable/disable the Vehicular Repeater System—Expanded Protocol (VRS-EP) Base Repeater option. The Base Repeater option must be enabled when the mobile radio is being used with a fixed site repeater. Enabling the Base Repeater option adds a 300-ms delay between unit prioritization thereby allowing non-priority mobiles to better detect any priority mobile in the system through the base repeater.</p>
VIP Control of VRS	<p>Use the UP/DOWN arrow keys to enable/disable Vehicle Interface Port (VIP) Control of the Vehicular Repeater System—Expanded Protocol (VRS-EP). The VIP Control of VRS allows the user to initiate and/or stop VRS-EP operation via a VIP port.</p> <p><b>Note:</b> <i>Only after enabling VIP Control of VRS will the VRS-EP VIP-In feature be available for selection.</i> This option must therefore be enabled prior to configuring the associated VIP-In feature.</p>

VIP Logic

Use the UP/DOWN arrow keys to select the desired Vehicle Interface Port (VIP) Logic. There are two possible choices:

Active Open	The Vehicular Repeater System—Expanded Protocol (VRS-EP) unit will be activated when there is no connection between the two VIP pins, meaning the VIP switch is in the open position.
Active Closed	The VRS-EP unit will be activated when the VIP pins are shorted together, meaning the VIP switch is in the closed position.

TOT Duration (sec)

Use the UP/DOWN arrow keys to select the desired Time-Out Timer (TOT) Duration. The TOT Duration indicates the maximum allowed time for base-to-portable transmissions. Any signal originating from the base is timed and will be dropped as soon as the stipulated TOT duration expires. Valid values are Infinite (for unlimited transmissions), 30, 60 and 120 seconds.

Singletone Freq (Hz)

*In this implementation, you will NOT be able to change the setting for this feature.* When the Vehicular Repeater System—Expanded Protocol (VRS-EP) unit is activated, it transmits a 700-millisecond tone (Singletone) which is relied upon by other VRS-EP units operating in the same area. This signal burst is used by the area units to coordinate the VRS-EP automatic prioritization routine. All units in the fleet should be programmed with the same VRS-EP Singletone frequency if they are to be used in multi-unit operations.

VRS-EP Tx Squelch Type

Use the UP/DOWN arrow keys to select the Vehicular Repeater System—Expanded Protocol (VRS-EP) Tx Squelch type to be used during signal repeats or broadcasts originating from the unit. The VRS-EP Tx Squelch type indicates the squelch scheme to be used by the VRS-EP during a signal broadcast. Transmissions from the VRS-EP will only be audible to a radio within the VRS-EP's transmission range if that radio's receive squelch type and setting match the VRS-EP's Tx Squelch designation. The options are:

TPL	Tone Private Line Squelch transmission. The VRS-EP will broadcast a tone of a given frequency along with all voice transmissions.
CSQ	Carrier Squelch transmission. The VRS-EP will broadcast a simple carrier presence signal with voice transmissions.

VRS-EP Tx PL Freq

Enter the Tx PL (Private-Line) frequency directly in Hz or, if accessing the frequency entry's alpha-numeric code field, enter the desired PL code. The UP/DOWN arrow keys may also be used to scroll through the standard frequencies or codes, all of which are shown below. The PL code may also be selected by pressing the key matching its first letter and then scrolling to select the exact code.

The Transmit (Tx) PL indicates the PL tone accompanying signals sent out by the Vehicular Repeater System—Expanded Protocol (VRS-EP). A portable radio within the VRS-EP's area of operation will be able to 'hear' broadcasts from the system only if that radio's receive PL frequency matches the indicated VRS-EP frequency.

Since the Tx PL frequency serves as the transmission PL, it should never be set identical to any of the VRS-EP's receive PLs. With Mode Steering operation disabled, there's only one such receive PL to consider. This is the Access PL Frequency/Code. With Mode Steering selected however, multiple receive PL's may come into play. In this case, the PLs to consider are the PL Frequencies/Codes on the MODE STEERING screen (F7 of the current screen), other than those set to "None". An attempt to exit from the current screen will result in a notice being popped up if any PL clash has been overlooked.

VRS-EP Tx PL Forwarding

Use the UP/DOWN arrow keys to enable/disable Transmit (Tx) PL Forwarding. When the Vehicular Repeater System—Expanded Protocol (VRS-EP) Tx PL Forwarding feature is enabled, the VRS-EP will communicate received PL frequencies to the mobile radio. When this feature is disabled, the PL frequency received from a portable radio will not be transmitted as part of received signals.

Mode Steering

Use the UP/DOWN arrow keys to select the Mode Steering behavior desired during Vehicular Repeater System—Expanded Protocol (VRS-EP) operation. The Mode Steering option gives the portable radios communicating with the VRS-EP the ability to select a number of mobile radio (Zone/Channel) modes. In other words, by assigning unique PL codes to a set of mobile radio modes referred to as Destinations, the portable radio user can direct the mobile radio to specific modes. This automatic steering occurs when the portable radio is keyed up on the portable radio channel with the appropriate PL assignment.

This option may also be used to allow portable radios to initiate a given set of mobile radio functions. This feature variation is obtained by programming the appropriate function as a Destination, instead of assigning a Zone/Channel to the selected Mode Steering PL frequency.

The choices are:

Disabled	Mode Steering operation turned off.
Tx Only Steering	Transmit Only Steering. The VRS-EP will only temporarily steer the mobile radio to the appropriate mode destination. The mobile is kept transmitting the incoming portable radio signal on that mode for as long as the signal continues. The previously selected mobile Mode is restored as soon as the portable radio stops transmitting.
Tx Steer/Rx Latch	Transmit Steering and Receive Latching. The VRS-EP controls the mobile radio in a manner similar to Tx Only Steering (above) but with one difference. At this setting, the mobile radio remains on the mode to which it has been steered even after transmission from the portable radio ceases.
Tx/Rx Steering	Transmit and Receive Steering. This setting results in a Mode Steering operation similar to both preceding operations. In this case, however, the mobile radio keeps operating on the mode to which it has been steered (as long as a six-second communication pause does not occur between the portable and base station).

**Note:** Depending on the RSS version in use, some of these choices may not be available.

## Access PL Freq

Enter the Access PL (Private-Line) frequency directly in Hz or, if accessing the frequency entry's alpha-numeric code field, enter the desired PL code. The UP/DOWN arrow keys may also be used to scroll through the standard frequencies or codes, all of which are shown below. The PL code may also be selected by pressing the key corresponding to its first letter and then scrolling to select the exact code.

The repeater Access PL specifies the exact PL tone required of incoming signals for access to be granted to the Vehicular Repeater System—Expanded Protocol (VRS-EP). A radio within the VRS-EP's area of operation will be able to gain access to the system only if its signals carry a PL tone matching the indicated Access PL.

**Note:** Since the Access PL frequency serves as the receive PL, it should never be set identical to the VRS-EP's transmit PL, identified by the selection for Tx PL Freq/Code. An attempt to exit from the current screen will result in a notice being popped up if this PL clash is overlooked.

Standard Private-Line Frequencies/Motorola Code are as follows:

Freq	Code	Freq	Code	Freq	Code	Freq	Code	Freq	Code
67.0	XZ	91.5	ZZ	123.0	3Z	167.9	6Z	225.7	M4
69.3	WZ	94.8	ZA	127.3	3A	173.8	6A	229.1	9Z
71.9	XA	97.4	ZB	131.8	3B	179.9	6B	233.6	M5
74.4	WA	100.0	1Z	136.5	4Z	186.2	7Z	241.8	M6
77.0	XB	103.5	1A	141.3	4A	192.8	7A	250.3	M7
79.7	WB	107.2	1B	146.2	4B	203.5	M1	254.1	OZ
82.5	YZ	110.9	2Z	151.4	5Z	206.5	8Z		
85.4	YA	114.8	2A	156.7	5A	210.7	M2		
88.5	YB	118.8	2B	162.2	5B	218.1	M3		

**Note:** A low level hum or buzz in the received audio may be experienced when PL frequencies above 241.8 (PL codes M7 or OZ) are used. These frequencies are at the high end of the sub-audible frequency range and may affect the audio under certain circumstances. Use of such PL frequencies and/or codes should be avoided if possible.

## Crystal Pull

Use the UP/DOWN arrow keys to enable/disable the Vehicular Repeater System—Expanded Protocol (VRS-EP) Crystal Pull. The Crystal Pull option makes it possible to reduce the amount of audible interference encountered during VRS-EP receive operation.

**Note:** This option should be enabled ONLY if the mobile radio unmutates unnecessarily during VRS-EP operation.

VRS-EP Mode Steering (**Mobiles Only**)

**D C I C G**

From the MAIN MENU, press **F4, F3, F9, F3** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Frequency.				
...VRS-EP OPTIONS:MODE STEERING									
VRS-EP MODE STEERING -----									
Mode Steer #	PL Freq(Hz)	PL Code	Steering Destination	Zn	Chn	Zone/Channel Name			
-----	-----	-----	-----	-----	-----	-----			
1	71.9	XA	Select Mode						
2	82.5	YZ	Zone/Chn	1	1	ZN01	CHN 1		
3	91.5	ZZ	Zone/Chn	20	125	ZN20	CHN 125		
4	103.5	1A	Trunked Msg						
5	97.4	ZB	Emer Alarm						
6	179.9	6B	Zone/Chn	20	1	ZN20	CHN 1		
7	210.7	M2	Emer Call						
8	250.3	M7	Zone/Chn	20	235	ZN20	CHN235		
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows you to view/edit all of the Vehicular Repeater System (VRS-EP) steering modes that can be found in a VRS-EP system. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

Field Definitions

PL Freq (Hz)

Select "None" or enter the Vehicular Repeater System—Expanded Protocol (VRS-EP) Mode Steering PL (Private-Line) frequency directly in Hz. The UP/DOWN arrow keys may also be used to scroll through the standard frequencies, all of which are shown on the following page.

The Mode Steering PL frequency specifies the exact incoming PL tone which when transmitted by a portable radio, should be interpreted by the VRS-EP as an instruction to perform the associated Steering Destination function. Note that this means that although permitted, assigning the same PL to more than one distinct Steering Destination function is not recommended and will result in one function being activated and the others ignored.

The frequency assigned here serves as the VRS-EP unit's receive PL in Mode Steering operation and may therefore not be identical to the transmit PL frequency, if assigned on the previous screen. Exit from the VRS-EP OPTIONS screen will not be possible if any selected Mode Steering PL Frequency matches the Tx PL Frequency value.

Standard Private-Line Frequencies/Motorola Code are as follows:

Freq	Code	Freq	Code	Freq	Code	Freq	Code	Freq	Code
67.0	XZ	91.5	ZZ	123.0	3Z	167.9	6Z	225.7	M4
69.3	WZ	94.8	ZA	127.3	3A	173.8	6A	229.1	9Z
71.9	XA	97.4	ZB	131.8	3B	179.9	6B	233.6	M5
74.4	WA	100.0	1Z	136.5	4Z	186.2	7Z	241.8	M6
77.0	XB	103.5	1A	141.3	4A	192.8	7A	250.3	M7
79.7	WB	107.2	1B	146.2	4B	203.5	M1	254.1	OZ
82.5	YZ	110.9	2Z	151.4	5Z	206.5	8Z		
85.4	YA	114.8	2A	156.7	5A	210.7	M2		
88.5	YB	118.8	2B	162.2	5B	218.1	M3		

**Note:** A low level hum or buzz in the received audio may be experienced when PL frequencies above 241.8 (PL codes M7 or OZ) are used. These frequencies are at the high end of the sub-audible frequency range and may affect the audio under certain circumstances. Use of such PL frequencies and/or codes should be avoided if possible.

PL Code

Enter the Vehicular Repeater System—Expanded Protocol (VRS-EP) Mode Steering PL (Private-Line) code or use the UP/DOWN arrow keys to scroll through the standard PL frequency codes, all of which are shown above.

The Mode Steering PL code specifies the exact incoming PL code which when transmitted by a portable radio, should be interpreted by the VRS-EP as an instruction to perform the associated Steering Destination function.

**Note:** *Although permitted, assigning the same PL to more than one distinct Steering Destination function is NOT recommended and will result in one function being activated and the others ignored.*

The PL code assigned here serves as the VRS-EP unit's receive PL in Mode Steering operation and may therefore not be identical to the transmit PL code, if assigned on the previous screen. You will not be allowed to exit the VRS-EP OPTIONS screen if any selected Mode Steering PL code matches the Tx PL code.

## Steering Destination

Use the UP/DOWN arrow keys to select the Steering Destination to be associated with the assigned Steering PL Frequency and Code. The Steering Destination is simply an assignment of the function or action to be performed during VRS-EP operation when the corresponding PL frequency is received from a portable radio. The VRS-EP uses this selection as its instructed action each time it receives the appropriate PL signal.

Zone/Chan	The VRS-EP will transmit the received portable radio voice signal on a given Channel. The Zone and Channel to be used in this form of operation can be selected on this screen, but are only visible if the Zone/Chan selection is made.
Select Mode	The VRS-EP will transmit a received portable radio signal on the mobile radio channel last selected using the mobile radio's mode switch. Note that since Select Mode may be assigned to only one PL frequency, this destination is selectable only once.
Emer Alarm	The VRS-EP transmission of the appropriate PL frequency from a portable radio will initiate the Emergency Alarm feature.
Trunk Msg	A message number can be assigned on this screen. The text associated with the indicated message number is transmitted when the correct PL signal is received from a portable radio. The message associated with the entered number must be programmed in the radio's Message Alias List. <i>This Steering Destination can only be assigned to one PL Frequency.</i>

**Note:** Depending on the MOTOROLA RSS version in use, some or all of the above Steering Destination assignments may be made selected.

## Zn (Zone)

Use the UP/DOWN arrow keys to select the Zone component of the mode on which Vehicular Repeater System—Expanded Protocol (VRS-EP) transmissions are to occur in Mode Steering operation. When the associated PL frequency is transmitted by a portable radio during VRS-EP operation, the system will repeat the received signal on a mobile radio channel within the specified Zone.

The Zones available for selection must have been pre-programmed via the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen (**F4/F8**). This means that a Zone value can be selected only if it exists in the Zone list.

VRS-EP Zone/Chan Mode Steering supports operation only on radio Zones 1 through 20. Regardless of the number of programmed radio Zones, the VRS-EP Zone assignment may not make reference to Zones 21 or higher. Note that if a Zone insert (instead of an add-to-end) is performed via the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**), any existing VRS Zone-20 reference would be pushed over the limit, if the insertion occurred in front of Zone 20. All VRS Zones which get affected in this way must be re-assigned on this screen. An attempt to save or program the codeplug will trigger an appropriate warning if any such invalid VRS Zones are detected.

Chn

Use the UP/DOWN arrow keys to select the Channel component of the mode on which Vehicular Repeater System—Expanded Protocol (VRS-EP) transmissions are to occur in Zone/Chan Steering Destination operation.

When the associated PL frequency is transmitted by a portable radio during VRS-EP operation, the system will repeat the received signal on the selected radio Channel. The Channels available for selection must have been pre-programmed via the ZONE/TALKGROUP (CHANNEL) ASSIGNMENT screen (**F4/F8**). This means that a Channel value can be selected only if it exists within the currently selected VRS-EP Zone.

Zone/Channel Name

*This field is not accessible.* It displays the names of the selected zone and channel combinations.

## Trunking Menu

# DD

From the MAIN MENU, press **F4** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW:TRUNKING	Select Function F1 - F10.								
TRUNKING MENU -----									
F1 - HELP F2 - Trunking Radio Wide Options F3 - Trunking Systems: System ID, Control Channels, etc. F4 - Trunking Personality: Talk Groups, Emergency options, etc. F5 - Trunking Call List Data F6 - F7 - F8 - F9 - F10 - EXIT, Return to Change/View Menu									
F1 HELP	F2 TRUNK WIDE OPT	F3 TRUNK SYS	F4 TRUNK PERS	F5 TRUNK ID LIST	F6	F7	F8	F9	F10 EXIT

This screen allows you to navigate to the Trunking edit screens. *The options in these menus pertain only to Trunking radio features.*

### Function Key Descriptions

**F2 - TRUNK WIDE OPT**  
(Trunking Radio Wide Options)

Brings up a screen from which you can access to options relating to Trunking operation.

**F3 - TRUNK SYS**  
(Trunking Systems)

Brings up a screen used to change and view Trunked system parameters. A Trunking system refers to a specific repeater site, system ID, individual radio ID for that system, control channel frequencies and the connect tone required to operate on that system.

**F4 - TRUNK PERS**  
(Trunking Personality)

Brings up a screen used to change and view the parameters for a Trunking personality. A Trunking personality refers to the type of features and options that are used on a Trunking channel or talkgroup. Multiple personalities may use the same system and multiple talkgroups may use the same personality.

**F5 - TRUNK ID LIST**  
(Trunking Call List)

Brings up a screen used to edit the list of Trunking Call IDs and their corresponding names (or aliases).

# Trunking Radio Wide Options

## D D B

From the MAIN MENU, press **F4** twice and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CHANGE/VIEW:TRUNKING:WIDE OPTIONS	Enter or Scroll to Select Value.								
<p>TRUNKING RADIO WIDE OPTIONS -----</p> <p>Telephone Interconnect.....Half Duplex ISW Window Adjust.....FF26 Auto Dial Holdoff (ms).....1925</p> <p>Emergency Blocked in Failsoft...Disabled</p>									
F1 HELP	F2 SMRTZN ENV	F3 VOC OPT	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Portables Only*

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...CHANGE/VIEW:TRUNKING:WIDE OPTIONS	Use UP/DOWN Arrows to Select Choice.								
<p>TRUNKING RADIO WIDE OPTIONS -----</p> <p>Telephone Interconnect.....Half Duplex ISW Window Adjust.....FF20 Auto Dial Holdoff (ms).....2000 RF Modem.....Disabled</p>									
F1 HELP	F2 SMRTZN ENV	F3 VOC OPT	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Mobiles Only*

The options and parameters on this menu apply to all Trunking operation independent of system, personality or talkgroup. Other radio wide options that apply to both Conventional and Trunking operation are located on the RADIO WIDE OPTIONS screen (**F4/F3/F2**). Conventional options are located on the CONVENTIONAL RADIO WIDE OPTIONS screen (**F4/F6/F2**).

Press **Tab** to select the desired field, or press the desired function key (**F1—F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - SMRTZN ENV  
(SmartZone Environment)

*This function will be visible only when a radio with the SmartZone software option has been read. Displays the screen where SmartZone operating environment parameters are defined.*

F3 - VOC OPT  
(Voice-On-Control Options)

*This function will be visible only when a radio with the Voice-On-Control option has been read. Displays the screen which allows you to specify options for Voice-On-Control sites.*

## Field Definitions

Telephone Interconnect

This option allows the radio to initiate and receive land-to-mobile telephone calls and specifies the type of interconnect.

Half duplex	Implies that communication can take place in one direction at a time only.
Full duplex	Permits communication in both directions simultaneously.

**Note:** *Portable products that can be programmed by this RSS support half-duplex phone communication ONLY.*

ISW Window Adjust

Use the UP/DOWN arrow keys to choose a code or enter the code directly. The ISW Window Adjust value is a timing parameter that is used to fine-tune Trunking system performance. It controls the time for the launch of the ISW. Decreasing this value causes the ISW to launch earlier and increasing this value causes the ISW to launch later. The valid range of values is 0 (zero) to FFFF in increments of 1.



Caution

Do NOT modify this field unless you are a Motorola Field Technical Representative or unless you understand Trunking system timing and are absolutely certain that your modification is correct. *Changing the ISW Window Adjust may actually degrade Trunking system performance.*

Auto Dial Holdoff (ms)

Use the UP/DOWN arrow keys to select the amount of time the radio will wait after gaining access to the phone channel before a pre-queued phone number will be dialed. It ensures that the fixed end is ready for dialing to commence. Normally, the user waits for a dial tone, but in this case, the radio is dialing and cannot detect dial tone. Valid entries range from 0 (zero) to 6375 in the increments of 25 ms.

RF Modem

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to enable/disable the Radio Frequency Modem function of the radio. If RF Modem is enabled, the radio will be able to function only as an RF Modem (that is, for use with Trunking System Watch PC Software). When RF Modem is disabled, the radio will operate normally.

**Note:** *This feature must be Enabled for the radio to operate with System Watch.*

Emergency Blocked In Failsoft

*This field will be visible for Portables only.* Use the UP/DOWN arrow keys to enable/disable the Emergency Blocked In Failsoft option. When this option is enabled and the network is in the Failsoft condition, the radio will ignore any attempt to enter the Trunked Emergency Feature.

# SmartZone Environment

## D D B B

From the MAIN MENU, press **F4** twice and then **F2** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter or Scroll to Select Value.
..WIDE OPTIONS:SMART_ZONE_ENVIRONMENT	
SMART_ZONE_ENVIRONMENT -----	
Failsoft Inactivity (sec).....120	Filter Constant K1.....9
Busy Override Delay (sec).....4	Filter Constant K2.....8
Aff. Hold Off (sec).....255	Filter Constant K3.....8
Busy Override Chirp Ack.....ON	Filter Threshold Constant T1...14
Display Site Trunking.....ON	Filter Threshold Constant T2...1A
Full Spectrum CC Scan.....OFF	Filter Threshold Constant T3...20
Full Spectrum CC Scan Timer...10	
RSSI OSW Counter.....80	
RSSI Acceptable Threshold.....34	
RSSI Good Threshold.....40	
RSSI Excellent Threshold.....46	
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10	
HELP	EXIT

This screen allows you to change and view parameters for the SmartZone environment. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

Failsoft Inactivity (sec)

Use the UP/DOWN arrows to make your selection or enter a value directly. If a radio remains inactive while operating in Failsoft for the time specified in this field, the radio will momentarily leave Failsoft mode and attempt to find a control channel. A value of zero in this field indicates that the radio will not leave failsoft. The valid range is 0 (zero) to 255 seconds in one-second increments.

Busy Override Delay (sec)

Use the UP/DOWN arrows to make your selection or enter a value directly. This is the time interval (in seconds) during which the user must depress the PTT button in order for the radio to issue a busy override signal. The valid range is 2 to 6 seconds in one-second increments.

Aff. Hold Off (sec)

Use the UP/DOWN arrows to make your selection or enter a value directly. This is the time that the radio should delay before affiliating to a new site when leaving a site which just incurred a failure. Valid entries are 1, 3, 7, 15, 31, 63, 127 and 255 seconds.

Busy Override Chirp Ack

Use the UP/DOWN arrows to make your selection. If this field is set to On, the radio will produce a chirping sound after a busy override has been issued.

Display Site Trunking

Use the UP/DOWN arrows to make your selection. If this field is set to On, the radio will display the Site Trunking message when the user is locked onto a site that is in Display Site Trunking mode.

Full Spectrum CC Scan

Use the UP/DOWN arrows to make your selection. If this field is set to On, the radio will perform a Full Spectrum Control Channel (CC) scan when the radio goes out of range of all its programmed control channel information.

Full Spectrum CC Scan Timer (sec)

*This field will be visible only if Full Spectrum CC Scan is set to On.* Use the UP/DOWN arrows to make your selection or enter a value directly. This is the amount of time that is available to the radio to perform a full spectrum CC scan before returning to the normal CC scan. The valid range of values is 5 to 31 seconds.

RSSI (Received Signal Strength Indication) OSW Counter

Use the UP/DOWN arrows to make your selection or enter a value directly. This is the number of OSWs (in 23-ms intervals) for which the radio must remain inactive on the control channel before a set of RSSI samples is taken. Valid values range from 60 to 255 ms.

**Note:** RSSI or Received Signal Strength Indication refers to the strength of the current signal.

RSSI Acceptable Threshold

Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels: poor, acceptable, good and excellent. This value specifies the poor/acceptable boundary. Domain {L: 00 <= L <= FFF}.



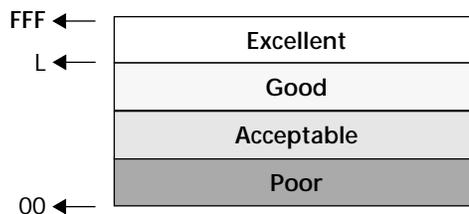
RSSI Good Threshold

Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels: poor, acceptable, good and excellent. This value specifies the acceptable/good boundary. Domain {L: 00 <= L <= FF}.



RSSI Excellent Threshold

Use the UP/DOWN arrows to make your selection or enter a value directly. In the RSSI sampling scheme, RSSI values are separated into four levels: poor, acceptable, good and excellent. This value specifies the good/excellent boundary. Domain {L: 00 <= L <= FF}.



Filter Constants K1, K2, and K3

Use the UP/DOWN arrows to make your selection or enter a value directly. The threshold constants K1, K2, and K3 are designed to reduce filter damage as time between sampling increases.

The RSSI filter has the following characteristic:

$$\text{Filter Val.} = (\text{Filter Val.} * K + \text{Current Reading} * (10 - K)) / 10$$

where the domain of K is {K: K = K1, K2, K3} and 0 (no filter) <= K3 <= K2 <= K1 <= 9 (heavily damped filter).

K1	Used when less than 8 seconds elapse between RSSI samples.
K2	Used when between 8 and 16 seconds elapse between RSSI samples.
K3	Used when more than 16 seconds elapse between RSSI samples.

Filter Threshold Constants T1, T2, and T3

Use the UP/DOWN arrows to make your selection or enter a value directly. The threshold constants T1, T2, and T3 create a window that RSSI samples must fall into in order to be considered valid. The window is centered around the current RSSI Filter Value. The window size is twice the value of the threshold constant.

The values (T1, T2, T3) are expressed as hexadecimal numbers ranging from 0 (zero) to FF and should only be modified in accordance with the following:

$$00 \leq T1 \leq T2 \leq T3 \leq FF$$

T1	Used when less than 8 seconds elapse between RSSI samples.
T2	Used when between 8 and 16 seconds elapse between RSSI samples.
T3	Used when more than 16 seconds elapse between RSSI samples.

**Note:** Modification of Filter Threshold Constants should be performed only under the direction of a qualified radio engineer.

# Voice-On-Control (VOC) Options

## D D B C

From the MAIN MENU, press **F4** twice, **F2** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...TRUNKING:WIDE OPTIONS:VOC OPTIONS	Use UP/DOWN Arrows to Select Choice.								
<p>VOC OPTIONS -----</p> <p>VOC Capable.....Disabled  RSSI Acceptable Threshold.....52  VOC Site Lock Time.....60  VOC Pended Emer Time (ms).....500  VOC Activation Time (ms).....500</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen defines the necessary data fields for operation on a Voice-on-Control capable site. When a site enters VOC Mode, its control channel is surrendered for a voice call. All radios that are not VOC capable will go out of range at that time.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

VOC Capable  
(Voice-On-Control Capable)

Use the UP/DOWN arrow keys to enable/disable this feature. When a radio is VOC-capable, it is able to handle the transition of a site going into and out of VOC mode without entering an out-of-range state.

RSSI Acceptable Threshold

Enter the desired value in hexadecimal or use the UP/DOWN arrow keys to scroll through the available choices. This field defines the minimum signal strength (RSSI value) for a radio to determine that it is in range of a valid Voice-On-Control channel. If a site enters Voice-On-Control, the radio will remain locked on to that site.

One of the possible conditions that would cause the radio to roam to another site (or possibly enter an out-of-range state) is when the radio determines there is about five seconds of low signal strength (that is, RSSI below this threshold) on the last active control channel. Valid entries range from 0 (zero) to 255.

VOC Site Lock Time (sec)

Enter the desired value directly or use the UP/DOWN arrow keys to scroll through the available choices. This field defines the maximum time that a radio will remain locked onto a Voice on Control site before it will attempt to lock on to another site (and possibly enter an out-of-range state). Valid entries range from 15 to 255 seconds in one-second increments.

VOC Pended Emer Time (ms)

Use the UP/DOWN arrow keys to select a value for this timer or enter a value directly. This is the maximum length of time that the radio will delay before a certain subset of ISWs will be sent while the radio is in VOC mode. Valid entries range from 500 to 6000 ms in 25-ms increments.

**Note:** Most ISWs are not permitted to be sent in while the radio is in VOC mode (the exceptions being Emergency and Phone Reject requests).

VOC Activation Time (ms)

Use the UP/DOWN arrow keys to select a value for this timer or enter a value directly. This field determines the maximum length of time that the radio will delay before sending in ISW requests upon receiving a system status OSW indicating the site is exiting VOC Mode. The valid range is 500 ms to 6000 ms in 25-ms increments.

# Trunking Systems D D C

From the MAIN MENU, press **F4** twice and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Enter or Scroll to Select System.				
MAIN: CHANGE / VIEW : TRUNKING : SYSTEM									
System..... 1					TRUNKING SYSTEM				
-----									
System Key.....Disabled									
System Type.....II/III									
System ID.....0001									
Alias.....Disabled									
Individual ID.....1-0001									
Connect Tone (Hz)#.....0-105.88					Network ID.....010				
Coverage Type.....Disabled									
Affiliation Type.....On PTT									
Dynamic Regrouping.....Disabled									
Zone...Blank Chan...Blank									
Remote Monitor.....Disabled									
RM Base Time.....15									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	CONTROL	MULTIKEY	ASTRO	MORE	EXIT
	SYSTEM	SYSTEM	SYSTEM	SYSTEM	CHANNEL	OPTIONS	OPTIONS	OPTIONS	

## TRUNKING SYSTEM 1, Type II/III

This screen is used to program the radio's Trunking System configuration. A Trunking System refers to a specific repeater site, the System ID, the individual radio ID for that system, the control channel frequencies and the connect tone required to operate on that system. Each system that the radio is programmed to operate on is linked to one or more Trunking personalities. The personality defines the features available to the radio while operating on that system. Each radio is uniquely identified on each system by its Individual ID.

**Note:** The Remote Monitor and RM Base Time fields will be valid for Portables only.

**Note:** For Other Band Trunking radios (UHF/VHF), **F6** CHAN ASSIGN will be visible instead of Control Channel.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

- |                    |   |
|--------------------|---|
| F2 - ADD SYSTEM    | Adds a Trunking system. <i>You cannot add a system unless a system key or a hardware key present.</i> |
| F3 - PREV SYSTEM   | Accesses the previous system.   |
| F4 - NEXT SYSTEM   | Accesses the next system.   |
| F5 - DELETE SYSTEM | Deletes the current system. You will be prompted before the system is actually deleted.               |

F6 - CONTROL CHAN (for 800MHz radios only)

Brings up a screen where you can change and view the control channels for the system.

or

F6 CHANASSIGN (Other Band Trunking)

Brings you to the Channel Assignment Data screen which allows you to enter Channel Assignment data.

F7 - MULTIKEY OPTIONS

Brings up a screen where you can change and view parameters associated with Multikey Trunking system options.

F8 - ASTRO OPTIONS

Brings up a screen where you can view and modify options that are unique to ASTRO models.

F9 - MORE OPTIONS

Brings up a screen where you can configure other options for Trunking system operation.

## Field Definitions

System

Use the UP/DOWN arrow keys to scroll through the available systems. Alternatively, you can use the F3/F4 function keys to navigate through the available systems.

System Key

*An FTR or System Key is required to access this field.* It holds the system key status for the current Trunking system.

System Type

Use the UP/DOWN arrow keys to select the Trunking system type. *If the Trunking System is Type II or III, the individual ID is a four-digit hexadecimal number. For Type II Trunking, your radio will have a single Individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated with on that system.*

Type I	The original MOTOROLA Trunked signalling protocol.
Type II	An enhanced version of the original protocol that provides additional fleet management flexibility for a given system via an expanded signalling format.
Type III	A hybrid of Type I and II signalling systems. This Trunking protocol type allows Type I radios to communicate with Type II radios on the same voice channel.

Each radio has a single individual ID per system, independent of the number of talkgroups, user groups, or personalities it is affiliated to on that system.

System ID

*A system key or FTR key is required to access this field.* This field contains the four-digit hexadecimal number which identifies the Trunked system.

Alias

Use the UP/DOWN arrow keys to enable/disable the System Alias feature. If Alias is enabled, the upper eight bits of the System ID are ignored.

Individual ID

*This field will be accessible only for Type II/III radios.* Enter the four-digit ID that uniquely identifies the current radio within the system. An actual ID must be entered, not a personality number. Valid IDs range

from 1 to FFFE. The decimal equivalent of this Individual ID is used for your radio's Private Conversation Call ID (7+ID#), interconnect land-to-portable unit calls (7+ID#), and interconnect land-to-portable talkgroup calls (7+ID#).

Connect Tone (Hz) #

*This field is not applicable to SmartZone systems.* Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. The Connect Tone is a sub-audible tone required on the voice channel to access the Trunked Repeater. The function is similar to the Conventional Repeater Access Tone.

0 - 105.88 Hz	4 - 97.30 Hz.
1 - 76.60 Hz	5 - 116.13 Hz
2 - 83.72 Hz	6 - 128.57 Hz
3 - 90.00 Hz	7 - 138.46 Hz

Coverage Type

*A system key or FTR key is required to access this field.* The choices for this field are:

WAC AMSS	Wide Area Coverage Automatic Multiple Site Select.
Local AMSS	Local Automatic Multiple Site Select.
SmartZone	Motorola system for wide area roaming.
Disabled	Disable wide area coverage.

In an AMSS system, multiple sites are linked together to form a larger Trunked system. Radios programmed for Wide Area AMSS can use the site that they are within range of, and when they move between sites, they can switch sites without interruption of communications that are in progress. *Up to eight control channels can be used for Wide Area Systems.*

If WAC AMSS is selected and WAC AMSS Failsoft is selected on the TRUNKING PERSONALITY screen (**F4/F4/F4**), the **F6** key on the TRUNKING PERSONALITY screen will be used to view and modify failsoft channel information. *Radios programmed for Local AMSS are allowed to use only one site.* This site is entered as the Site ID below the Coverage Type field.

Affiliation Type

Use the UP/DOWN arrow keys to select the desired Affiliation Type.

Automatic	The radio will immediately affiliate with the central controller as soon as it is turned on and will automatically re-affiliate each time the talkgroup is changed (that is, if the selected talkgroup does not match last affiliated talkgroup).
On PTT	The radio will affiliate only when PTT is pressed.

*SmartZone radios MUST use Automatic Affiliation. These radios always affiliate on power-up and on site switches (in addition to affiliating on Talkgroup changes).*

Dynamic Regrouping	Use the UP/DOWN arrow keys to enable/disable this feature for the current system. A Dynamic Regrouping Talkgroup position (DYN) must be assigned on the ZONE/SUMMARY screen (F4/F8). Enabling Dynamic Regrouping will automatically add DYN to the list of talkgroups on that screen. Dynamic Regrouping allows the dispatcher to temporarily reassign selected radios operating in separate fleets and/or talkgroups into a single group.
	<b>Note:</b> <i>Only one DYN position may be assigned for each system.</i>
Zone	<i>This field will be visible only if Dynamic Regrouping is enabled.</i> Use the UP/DOWN arrow keys to make your selection or enter a number directly. This is the zone position used when a radio is dynamically regrouped. This is used in conjunction with the channel position to determine which zone/channel talkgroup will be used during Dynamic Regrouping.
Chan	<i>This field will be visible only if Dynamic Regrouping is enabled.</i> Use the UP/DOWN arrow keys to make your selection or enter a number directly. This is the channel position used when a radio is dynamically regrouped. This is used in conjunction with the zone position to determine which zone/channel talkgroup will be used during Dynamic Regrouping.
Remote Monitor	<i>This field is applicable to Portable radios only.</i> Use the UP/DOWN arrow keys to enable/disable Radio Trace (remote monitor) for this system.
RM Base Time	<i>This field is applicable to Portable radios only.</i> Use the UP/DOWN arrow keys to select the desired timer value or enter a value directly.
Network ID	<i>This field is only displayed for radios equipped with CAI Digital Operation.</i> This field displays the Network ID for the current system.

**Note:** *This field cannot be edited.*

## Control Channel (800 MHz)

# DDCF

From the MAIN MENU, press **F4** twice, **F3** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...TRUNKING:SYSTEM:CONTROL CHANNEL	Enter or Scroll to Select System.								
System..... 1									
CONTROL CHANNELS									
-----									
Number	Frequency								
-----									
1	851.0125								
F1 HELP	F2 ADD CHAN	F3 PREV SYS	F4 NEXT SYS	F5 DELETE CHAN	F6	F7	F8	F9	F10 EXIT

This screen is used to change and view Control Channel frequencies for the current system. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F2 - ADD CHAN**  
(Add Channel)

Adds a channel.

**F3 - PREV SYSTEM**

Accesses the previous system.

**F4 - NEXT SYSTEM**

Accesses the next system.

**F5 - DELETE CHAN**  
(Delete Channel)

Deletes the current channel. You will be prompted for confirmation before the channel is actually deleted.

## Field Definitions

System

Use the UP/DOWN arrow keys to scroll through the available Trunking systems. Alternately the **F3/F4** function keys can be used to navigate through the available systems.

Control Channel

*A system key or FTR key is required to access this field. The **F2** and **F5** function keys can be used to add/delete channels respectively. Enter the Control Channel frequencies directly in MHz. Four Control Channel frequencies are standard (eight if Wide Area AMSS is enabled and four for Local AMSS).*

# Channel Assignment Data - (for Other Band Trunking-UHF/VHF) D D C F

From the MAIN MENU, press **F4** twice, **F3** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Enter or Scroll to Select System.				
...SYSTEM:CHAN ASSIGN:CHANNEL									
System..... 1									
CHANNEL ASSIGNMENT DATA									
Rx Channel Ranges - MHz					Tx Channel Ranges - MHz				
#	Status	(kHz)	Start	End	Status	(kHz)	Start	End	
1	Enable	6.25	136.00000	136.00000	Enable	6.25	136.00000	136.00000	
2	Blank				Blank				
3	Blank				Blank				
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV SYS	NEXT SYS		CONTROL CHANNEL				EXIT

This screen is used to enter the Channel Assignment Data used for Other Band Trunking.

After the Receive and Transmit ranges are defined, press **F6** to enter the Control Channel frequencies.

 Caution	This information must match the Central Controller exactly or the system will not work.
--	---

### Assignment Rules:

1. The start frequency must be less than the End frequency, and they must be within the allowed frequency range of the radio
2. (End Freq - Start Freq) must be evenly divisible by the channel spacing so the range can be divided into an integer value to assign the control channel number properly.
3. A maximum of 380 receive channels and 380 transmit channels can be assigned. The number of channels per range is:  

$$\text{(End Freq - Start Freq) / Spacing} + 1.$$

### Function Key Descriptions

- |                             |   |
|-----------------------------|---|
| <b>F3</b> - PREV SYSTEM     | Accesses the previous system.                 |
| <b>F4</b> - NEXT SYSTEM     | Accesses the next system.                     |
| <b>F6</b> - CONTROL CHANNEL | Will bring you to the Control Channel screen. |

## Field Definitions

**System** Use the UP/DOWN arrow keys to scroll through the available systems. Alternately the **F3/F4** function keys can be used to navigate through the available systems.

**Status** Use the UP/DOWN arrow keys to enable this frequency split.

**Spacing (kHz)** Use the UP/DOWN arrow keys to select the Channel Spacing for this frequency range. (End Freq - Start Freq) must be evenly divisible by the channel spacing so the range can be divided into an integer value to assign the control channel number properly.

**Start** Enter the Frequency Range Start point directly in MHz. The Start frequency must be less than the end frequency, and they must be within the allowed frequency range of the radio.

DO NOT use the UP/DOWN arrow keys.

 Caution	This information must match the Central Controller exactly or the system will not work.
--	---

**End** Enter the Frequency Range End point directly in MHz. The Start frequency must be larger than the start frequency, and they must be within the allowed frequency range of the radio.

## Control Channel (for Other Band Trunking - UHF/ VHF)

# DDCF F

From the MAIN MENU, press **F4** twice, **F3** and then **F6** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter or Scroll to Select System.								
...SYSTEM:CHAN ASSIGN:CONTROL CHANNEL									
System..... 1									
CONTROL CHANNELS									
Number	Tx Freq Rx Freq								
-----	-----								
1	136.00000 136.00000								
-----	-----								
F1 HELP	F2 ADD CHAN	F3 PREV SYS	F4 NEXT SYS	F5 DELETE CHAN	F6	F7	F8	F9	F10 EXIT

This screen is used to enter the Control Channel frequencies for Other Band Trunking.

DO NOT use the UP/DOWN arrow keys when selecting frequencies.

**Note:** Receive and Transmit frequencies are required all Other Band Trunking radios.

## Function Key Descriptions

**F2** - ADD CHAN  
(Add Channel)

Adds a channel.

**F3** - PREV SYSTEM

Accesses the previous system.

**F4** - NEXT SYSTEM

Accesses the next system.

**F5** - DELETE CHAN  
(Delete Channel)

Deletes the current channel. You will be prompted for confirmation before the channel is actually deleted.

## Field Definitions

System

Use the UP/DOWN arrow keys to scroll through the available Trunking systems. Alternately the **F3/F4** function keys can be used to navigate through the available systems.

Tx Freq

Enter the Control Channel Transmit frequency directly in MHz.

DO NOT use the UP/DOWN arrow keys when selecting frequencies.

Control channels are used by the radio to send/receive information to the central trunking repeater system. Up to four control channels are used for standard trunking operation; up to eight are used for WAC AMSS.

Use the function keys to add and delete channels.

Rx Freq

Enter the Control Channel Receive frequency directly in MHz.

DO NOT use the UP/DOWN arrow keys when selecting frequencies.

Control channels are used by the radio to send/receive information to the central trunking repeater system. Up to four control channels are used for standard trunking operation; up to eight are used for WAC AMSS.

Use the function keys to add and delete channels.

# Multikey Options DDCG

From the MAIN MENU, press **F4** twice, **F3** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...TRUNKING:SYSTEM:MULTIKEY OPTIONS	Use UP/DOWN Arrows to Select Choice.								
<p>MULTIKEY TRUNKED SYSTEM OPTIONS</p> <p>-----</p> <p>Patch Key Select.....1</p> <p>Failsoft Key Select.....1</p> <p>Private Call Key Select.....1</p> <p>Interconnect Key Select.....1</p> <p>System Wide Key Select.....1</p> <p>Dynamic Talkgroup Key Select.....1</p> <p>Dynamic Announcement Group Key Select..1</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen is used to change and view multikey options affecting Trunked system wide operation. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Patch Key Select

Use the UP/DOWN arrow keys to select the key number for the patch talkgroup.

Failsoft Key Select

Use the UP/DOWN arrow keys to select the key number that will be used when the radio goes into Failsoft mode.

Private Call Key Select

Use the UP/DOWN arrow keys to select the key number that will be used during a Private Call.

Interconnect Key Select.

Use the UP/DOWN arrow keys to select the key number that will be used during a Interconnect Call.

System Wide Key Select

Use the UP/DOWN arrow keys to select the key number that will be used during a System Wide Call.

Dynamic Talkgroup Key Select

Use the UP/DOWN arrow keys to select the key number for Dynamic Talkgroup.

Dynamic Announcement Group Key Select

Use the UP/DOWN arrow keys to select the key number for Dynamic Announcement Group.

# ASTRO Options D D C H

From the MAIN MENU, press **F4** twice, **F3** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model:	Use UP/DOWN Arrows to Select Choice.								
..CHANGE/VIEW:TRUNKING:SYSTEM:OPTIONS									
System.....1      ASTRO TRUNKING SYS. OPTIONS -----									
<p style="text-align: center;">           ASTRO Capable System.....Disabled            Preamble Length.....120            Auto Power Adaption.....Disabled            Digital Modulator Type.....C4FM            High Deviation Tx.....Disabled            Data Enable.....Enabled            Data Tx Time.....5         </p>									
F1 HELP	F2	F3 PREV SYS	F4 NEXT SYS	F5	F6	F7	F8	F9	F10 EXIT

This screen is used to change and view parameters that pertain to ASTRO on a Trunking system. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

**Note:** The Data Enable and Data Tx Time fields are valid for Mobiles only.

## Function Key Descriptions

- F3 - PREV SYSTEM**      Accesses the previous system.
- F4 - NEXT SYSTEM**      Accesses the next system.

## Field Definitions

**System**      Use the UP/DOWN arrow keys to select the desired Trunking system. The system number may also be entered directly, or selected using the function keys.

**Note:** Refer to the Motorola Radio Catalog Sheets for the maximum number of systems allowed for this model.

**ASTRO Capable System**      Use the UP/DOWN arrow keys to enable/disable this feature. The setting in this field determines whether the Trunking system of the radio will be operating on its ASTRO signalling mode. This field must be set to Enabled if ASTRO signalling is to be used on the system.

**Preamble Length**      Use the UP/DOWN arrow keys to make your selection to enter a value directly. This field is the minimum number of ASTRO bit sync preamble bits sent at the beginning of all ASTRO transmissions from the radio. The valid range is 0 to 255.

Auto Power Adaption	Use the UP/DOWN arrow keys to enable/disable this feature. <i>This field only has meaning if user selectable power is NOT enabled.</i> This field determines if Automatic Power Adaption is used. This field will automatically adjust the transmitter power level (on the voice channel, not on the control channel) based on information received over the air and the radio's own internal state. When this field is disabled, Automatic Power Adjustment is not active. When this field is enabled, Automatic Power Adjustment is active.
Digital Modulator Type	<i>This field represents the Digital Modulator Type for this personality. The valid modulation choices are:</i>
	C4FM            - non-simulcast operation
	CQPSK        - narrowband simulcast operation
	WIDE           - wideband simulcast operation
	<b>Note:</b> WIDE cannot be chosen if a channel Bandwidth of 12.5 kHz is selected on the Trunking System Options screen ( <b>F4/F4/F3/F9</b> ).
	The factory default is C4FM.
High Deviation Tx	Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will transmit ASTRO voice and/or data with increased deviation.
	<b>Note:</b> A high transmit deviation is necessary ONLY if the radio is to be used in vehicles or applications which subject the unit to speeds in excess of 160 miles per hour (approximately 257 kilometers per hour).
Data Enable	<i>This field will be visible for Mobiles only.</i> It determines if the current Trunking system is enabled/disabled for data operation.
Data Tx Time	<i>This field will be visible for Mobiles only.</i> It determines the maximum time allowed for the radio to transmit on the data channel. The range of values is 1 to 31 seconds in one-second increments, or 0 for Infinite.

# Trunking System Options

## DDCI

From the MAIN MENU, press **F4** twice, **F3** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Choice.							
..CHANGE/VIEW:TRUNKING:SYSTEM:OPTIONS									
System.....1 TRUNKING SYSTEM OPTIONS -----									
Tx Power Select.....High		Phone DTMF Timing.....2							
Trunk Repeater Offset.....45 MHz		Initial Delay (ms).....1000							
		Digit Duration (ms).....125							
Channel Assgn. Type.....Domestic		Inter Digit Delay (ms).....75							
Splinter Channel.....Disabled		Hot DTMF Timing.....2							
Rx Modulation.....2 Level Receive		Initial Delay (ms).....1000							
		Digit Duration (ms).....125							
		Inter Digit Delay (ms).....75							
806 Channel Bandwidth.....25.0 kHz		Status Aliasing.....Enabled							
821 Channel Bandwidth.....25.0 kHz		Message Aliasing.....Enabled							
		Site Aliasing.....Enabled							
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV	NEXT	ONE	STATUS	MSG	SITE		EXIT
		SYS	SYS	TOUCH	ALIAS	ALIAS	ALIAS		

The TRUNKING SYSTEM OPTIONS screen lets you access additional features and options to further customize the radio configuration to a customer's communication needs.

 Caution	Caution should be observed when changing parameters on this screen. System parameter changes can substantially degrade performance if they are not made system wide.
---	--

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

- |                                   |   |
|-----------------------------------|---|
| F3 - PREV SYS                     | Accesses the previous system.   |
| F4 - NEXT SYS                     | Accesses the next system.   |
| F5 - ONE TOUCH                    | <i>This function will be visible only when a radio ordered with the One-Touch feature has been read. Brings up a screen where you can assign functions to one-touch features.</i>   |
| F6 - STATUS ALIAS                 | <i>This function will be visible only when a radio containing the SMARTNET or SmartZone software option has been read and the Status Aliasing field is set to enabled. Brings up a screen where you can change and view the parameters associated with Trunking system Status Alias List.</i> |
| F7 - MSG ALIAS<br>(Message Alias) | <i>This function will be active only when a radio containing the SMARTNET or SmartZone software option has been read and the Message Aliasing field is set to enabled. Brings up a screen where you can assign a number and name alias to a particular message.</i>                           |

## F8 - SITE ALIAS

*This function will be active only when the Site Aliasing field is set to enabled. Brings up a screen where you can change and view the parameters associated with Trunking system Site Alias.*

## Field Definitions

### System

Use the UP/DOWN arrow keys to select the desired Trunking system. You may also enter the system number directly or select it using the **F3/F4** function keys.

**Note:** Refer to the Radio Catalog Sheets for the maximum number of systems allowed for this model.

### Tx Power Select

Use the UP/DOWN arrow keys to select either High or Low transmit power operation for the radio on this system. The transmit power may be reduced by setting this field to "Low".

### Trunk Repeater Offset

*This is a view-only field.* This value must be set to the frequency separation between the Tx and Rx frequencies used at the central repeater site.

### Channel Assgn. Type

Use the UP/DOWN arrow keys to select Domestic or International.

Domestic	25 kHz channel spacing used in the USA
International	12.5 kHz channel spacing used outside the USA

### Splinter Channel (800 MHz Only)

Use the UP/DOWN arrow keys to enable/disable this feature. The control channels will be shifted down 12.5 kHz and the radio will interpret the channel numbers received over the air as splinter channels as well. *Channels in the 821 band will not be affected.*

### Rx Modulation

*This field will be visible for Secure-equipped radios only.* Use the UP/DOWN arrow keys to make your selection. The value in this field should be based on the expected receive data format for the personality. This field allows the user to configure the radio's personality for:

- Strictly binary (two-level) receive operation;
- Strictly multi-level (four-level) receive operation; or
- Both binary and multi-level receive operation (Auto Receive).

When operating in Auto Receive mode, the radio will automatically detect the received signal type and process the data accordingly. *Two-level sensitivity is reduced when operating in the Auto Receive mode and thus should not be used on channels or systems that are strictly binary (two-level).*

## 806 Channel Bandwidth

**Note:** A system or FTR key is required to access this field. Use the UP/DOWN arrow keys to select the Channel Bandwidth. For the 800 MHz domestic Trunking system configuration, this field is designated 806 Channel Bandwidth. The value of the field specifies the Channel Bandwidth of frequencies in the range of 806 MHz to 821 MHz. The bandwidth for the frequencies in the range 821 MHz to 824MHz are set in the 821 Channel Bandwidth field. For all Trunked system configurations, this value specifies the channel bandwidth for that entire system.

**Note:** 12.5 kHz cannot be selected if the Digital Modulator Type field on the ASTRO Trunking System Options screen (F4/F4/F3/F8) is set to WIDE.

## 821 Channel Bandwidth

A system or FTR key is required to access this field. Use the UP/DOWN arrow keys to select the Channel Bandwidth. For the 800 MHz domestic Trunking system configuration, this field specifies the Channel Bandwidth of the frequencies in the range of 821MHz to 824 MHz.

**Note:** Strapping fields for announcement group, Fleet ID, Talkgroup, etc. will be forced to Clear if 12.5 kHz is selected and the group is Analog.

## Phone DTMF Timing

Use the UP/DOWN arrow keys to select the set of DTMF timing parameters for the current personality. Timing may be changed for Initial Delay, Digit Duration and Interdigit Delay. The radio contains a table with four sets of values for these parameters. *The actual parameters are entered on the DIALING OPTIONS screen (F4/F3/F4/F9).*

## Hot DTMF Timing

Use the UP/DOWN arrow keys to select the set of DTMF timing parameters for this personality. Timing may be changed for Initial Delay, Digit Duration and Interdigit Delay. The radio contains a table with four sets of values for these parameters. *The actual parameters are entered on the DIALING OPTIONS screen (F4/F3/F4/F9).*

## Status Aliasing

Use the UP/DOWN arrow keys to enable/disable Status Aliasing. This option allows you to customize the Status number and assign an alias name to each message (F6). *The Status Alias feature must be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4), and the status mnemonic (STS) must be assigned on the RADIO WIDE MENU CONFIGURATION screen (F4/F3/F3/F4).*

## Message Aliasing

Use the UP/DOWN arrow keys to enable/disable Message Aliasing for this system. This option allows you to customize the Message number and assign an alias name to each message (F7). *The message feature must be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4), and the message mnemonic (MSG) must be assigned on the RADIO WIDE MENU CONFIGURATION screen (F4/F3/F3/F4).*

## Site Aliasing

Use the UP/DOWN arrow keys to enable/disable Site Aliasing. This option will allow you to customize the site number and to assign an alias name to each site. *AMSS or SmartZone must be added on the TRUNKING SYSTEM screen (F4/F4/F3) and the SITE mnemonic must be assigned on the RADIO WIDE MENU CONFIGURATION screen (F4/F3/F3/F4) for this feature to operate properly.*

## Trunking One-Touch Button Options

# DDCI E

From the MAIN MENU, press **F4** twice, **F3**, **F9** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
...TRUNKING:SYSTEM:OPTIONS:ONE TOUCH									
<p>ONE TOUCH BUTTON OPTIONS</p> <p>-----</p> <p>Button 1 Feature.....Disabled Index.....1</p> <p>Button 2 Feature.....Disabled Index.....1</p> <p>Button 3 Feature.....Disabled Index.....1</p> <p>Button 4 Feature.....Disabled Index.....1</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen can be accessed from the TRUNKING SYSTEM OPTIONS screen (**F4/F4/F3/F9**) only when a radio ordered with the One-Touch feature (or a corresponding codeplug) has been read.*

The One-Touch Feature is activated by pressing Side Button 1, 2, 3 or the Orange Button. These buttons can be programmed for One-Touch operation on the RADIO WIDE BUTTON CONFIGURATION screen (**F4/F3/F3/F2**). When a button programmed for one-touch operation is pressed, the Phone, Private Call, Call Alert, Status, or Message corresponding to the One-Touch Index will be initiated. This facilitates quick access to frequently used functions.

For example, assume that the One Touch Button 1 feature is selected as Phone, the One Touch Index is set to 2, and the Orange Button is programmed as One Touch 1. When the Orange button is pressed, the second telephone number from the phone list will be transmitted.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Button (number)

Use the UP/DOWN arrow keys to select the feature that corresponds to each one-touch button. One-touch buttons 1 through 4 may be programmed as Trunking buttons on the RADIO WIDE BUTTON CONFIGURATION screen (**F4/F3/F3/F2**).

*Pressing a one-touch button while the radio is already in the feature corresponding to the one-touch button will cause the radio to abort the feature.*

**Note:** The availability of Phone, Private Call, Call Alert, Message, and Status on any one-touch button is determined by the radio wide model options purchased for your radio.

The default value for all one-touch buttons is Disabled.

Index

Enter the value for the index into the list pertaining to the feature (Phone, Private Call, Call Alert, Status, or Message) assigned to the one-touch button.

**Note:** *The list size depends on both the radio model and the feature assigned to the one-touch button.*

## Trunking Status Alias

From the MAIN MENU, press **F4** twice, **F3**, **F9** and then **F6** to access this screen.

# DDCI F

MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Value.
...SYSTEM:OPTIONS:STATUS ALIAS		
TRUNKING STATUS ALIAS -----		
Num	Status Alias Number	Status Alias Text
-----		
1	1	STS 1
2	2	STS 2
3	3	STS 3
4	4	STS 4
5	5	STS 5
6	6	STS 6
7	7	STS 7
8	8	STS 8
F1 HELP	F2 ADD ITEM	F3
F4	F5 DELETE ITEM	F6
F7	F8	F9
F10 EXIT		

### Trunking System Type II

*This screen can be accessed only if a radio containing the SMARTNET or SmartZone software option (or a corresponding codeplug) has been read and the Status Alias field on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9) is set to Enabled. This screen allows you to add and delete items in the Trunking Status Alias List.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F2 - ADD ITEM**

Adds a Trunking Status Alias item.

**F5 - DELETE ITEM**

Deletes the current Trunking Status Alias item. You will be prompted before the item is actually deleted.

## Field Definitions

Number

This field is for viewing only. It cannot be changed.

Status Alias Number

Use the UP/DOWN arrows to make your selection. This field indicates the position number for the Status Alias Text field. The valid range of values is one to eight for Trunking and one to 16 for MDC and ASTRO.

Status Alias Text

Enter the ASCII text that must be displayed on the radio when the corresponding status number is selected.

# Trunking Message Alias

From the MAIN MENU, press **F4** twice, **F3**, **F9** and then **F7** to access this screen.

## DDCI G

MOTOROLA Radio Service Software ASTRO Model: Page 1 of 2 ...SYSTEM:OPTIONS:MESSAGE ALIAS	Enter or Scroll to Select Value.
---	----------------------------------

TRUNKING MESSAGE ALIAS		
-----		
Num	Message Alias Number	Message Alias Text
-----		
1	1	MSG 1
2	2	MSG 2
3	3	MSG 3
4	4	MSG 4
5	5	MSG 5
6	6	MSG 6
7	7	MSG 7
8	8	MSG 8

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	ITEM			ITEM					

### Trunking System Type II

*This screen can be accessed only if a radio containing the SMARTNET or SmartZone software option (or a corresponding codeplug) has been read and the Message Aliasing field on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9) is set to Enabled. This screen allows you to add and delete items from the Trunking Message Alias List.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F2 - ADD ITEM** Adds a Trunking Message Alias item.

**F5 - DELETE ITEM** Deletes a Trunking Message Alias item. You will be prompted before the item is actually deleted.

### Field Definitions

**Number** This field is for viewing only. It cannot be changed.

**Message Alias Number** Use the UP/DOWN arrows to make your selection. This field indicates the position number for the Message Alias Text Field. The valid range of values is one to 16.

**Message Alias Text** Enter the ASCII text that must be displayed when the corresponding message number is selected.

# Trunking Site Alias DDCIH

From the MAIN MENU, press **F4** twice, **F3**, **F9** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Value.							
...TRUNKING:SYSTEM:OPTIONS:SITE ALIAS									
TRUNKING SITE ALIAS -----									
Num	Site Alias Number	Site Alias Text							
-----	-----	-----							
1	1	SITE 1							
2	2	SITE 2							
3	3	SITE 3							
4	4	SITE 4							
5	5	SITE 5							
6	6	SITE 6							
7	7	SITE 7							
8	8	SITE 8							
F1 HELP	F2 ADD ITEM	F3	F4	F5 DELETE ITEM	F6	F7	F8	F9	F10 EXIT

## Trunking System Type II

*This screen can be accessed only if the Site Alias field on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9) is set to Enabled. This screen allows you to add and delete items in the Trunking Site Alias List.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - ADD ITEM

Adds a Trunking Site Alias item.

F5 - DELETE ITEM

Deletes a Trunking Site Alias item. You will be prompted before the item is actually deleted.

## Field Definitions

Number

This field is for viewing only. It cannot be changed.

Site Alias Number

This field indicates the position number for the Site Alias Text Field. The valid range of values is 1 to 64.

Site Alias Text

Enter the ASCII text that must be displayed when the corresponding site number is selected.

# Trunking Personality D D D

From the MAIN MENU, press **F4** three times to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Value.							
MAIN:CHANGE/VIEW:TRUNKING:PERS									
Personality.....1                    TRUNKING PERSONALITY ----- Protocol Type.....II                  Private Call Type....Enhanced PC System/ID.....1-0001                  Operation.....List Only Type.....II/Iii Announcement Group.....None                  Call Alert Operation....List Only Phone Interconnect.....List Only Hot Keypad (DTMF).....Disabled Status.....Enabled Message.....Enabled Call ID List.....1  Individual ID.....1-0001 Failsoft Type.....Disabled  Time Out Timer.....3-                  60                  Scan List..... 1									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	WACAMSS	TALK	EMER	MORE	EXIT
	PERS	PERS	PERS	PERS	FAILSOFT	GROUPS	OPTIONS	OPTIONS	

## Trunking System Type II

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Type.							
MAIN:CHANGE/VIEW:TRUNKING:PERS									
Personality.....1                    TRUNKING PERSONALITY ----- Protocol Type.....Iii                  Private Call Type.....PCII System/ID.....1-0001                  Operation.....Unlimited Type.....II/Iii Size Code.....A                          Call Alert Operation....Disabled Fleet ID.....001                          Phone Interconnect.....Disabled Hot Keypad (DTMF).....Disabled Status.....Disabled Message.....Disabled Call ID List.....1  Individual ID.....1-0001 Failsoft Type.....Disabled  Time Out Timer.....3-                  60                  Scan List.....None									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	WACAMSS	SUB	EMER	MORE	EXIT
	PERS	PERS	PERS	PERS	FAILSOFT	FLEETS	OPTIONS	OPTIONS	

## Trunking System Type Iii

These screens are used to view and edit the main information for a Trunking personality, such as the system number and time-out timer to be used and other options. It also provides access to the other Trunking screens such as those which relate to talkgroups, emergency, etc.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - ADD PERS	Adds a personality. <i>This operation is NOT allowed without a system key or a hardware key present.</i> You will automatically be moved to the new personality.
F3 - PREV PERS	Accesses the previous personality.
F4 - NEXT PERS	Accesses the next personality.
F5 - DELETE PERS	Deletes the current personality. You will be prompted before the personality is actually deleted.
F6 - WAC AMSS FAILSOFT	<i>This function will be visible only if the Coverage Type on the TRUNKING SYSTEM screen (F4/F4/F3) and the Failsoft Type on the TRUNKING PERSONALITY screen (F4/F4/F4) fields are set to WAC AMSS.</i> The Failsoft frequency used depends on which AMSS site the radio is using at the time. The frequencies are entered on the screen accessed by pressing this key.
F7 - TALKGROUPS/SUBFLEETS	<i>If the Protocol Type field on this screen is set to III, this function will read SUBFLEETS. If the Protocol Type field is set to II, this function will read TALKGROUPS.</i> Brings up a screen where you can edit the position of the subfleets/talkgroups and associated data such as Secure strapping and scan type.
F8 - EMER OPTIONS (Emergency Options)	<i>This function will be active only when a radio containing the SMARTNET or SmartZone software option has been read.</i> Brings up a screen where you can edit and enable emergency information such as default talkgroup and edit emergency options such as Console Acknowledge Required.
F9 - MORE OPTIONS	Brings up a screen where you can change or view more Trunking personality parameters.

## Field Definitions

Personality	Use the UP/DOWN arrow keys or use the <b>F3/F4</b> keys to scroll through the available personalities and make your selection. Personalities can be added by pressing <b>F2</b> or deleted by pressing <b>F5</b> . You will be prompted before the personality is actually deleted.
Protocol Type	Use the UP/DOWN arrows to select the Protocol Type. This refers to the type of Trunking system. The available options are:

Type II	An enhanced version of the original Motorola protocol that provides additional fleet management flexibility for a given system via an expanded signalling format.
Type III	A hybrid of Type I and II signalling systems. This Trunking protocol type allows Type I radios to communicate with Type II radios on the same voice channel.

System/ID Use the UP/DOWN arrow keys to select the Trunking system the current personality is to use. (The system ID is shown according to system number). *The Trunking system should be set up on the TRUNKING SYSTEM screen (F4/F4/F3) before personality information is entered since some of these fields depend on Trunking system information.*

Type Use the UP/DOWN arrows to make your selection. The selection in this field indicates the Trunked signalling protocol used on this system. *If the Trunking System is Type II or III, the individual ID is a four-digit hexadecimal number. For Type II Trunking, your radio will have a single Individual ID for each system, independent of the number of talkgroups, user groups or personalities it is affiliated with on that system.*

Announcement Group Enter a three-digit hexadecimal number for the Announcement Talkgroup directly. This field contains the user talkgroup for announcements for the current personality.

ASTRO AG Strapping *This field will be visible only when the Announcement Group is not set to None.* Use the UP/DOWN arrow keys to make your selection. You can select ASTRO Strapping for the Announcement Group (F4/F4/F4), and also select ASTRO Strapping for the Talkgroup on the TRUNKING TALKGROUPS screen (F4/F4/F4/F7). Valid choices are Analog and Digital.

Fleet ID *A system key or FTR key is required to access this field.* The Fleet ID is a three-digit hexadecimal number where the first digit is the prefix and the second two digits refer to the fleet. For any size code, the subfleets for Fleetwide and Dynamic Regrouping are always available. The Announcement Group may or may not be included in the Talkgroup list entered by F7. Also, Failsoft for the announcement may be disabled on this screen.

*The valid range for the Fleet I depends on the size code chosen. Examples of Fleet IDs are 300, 402, 001, and 703.*

Strapping Use the UP/DOWN arrows to select the Transmit mode of the Announcement Group or Fleet ID for this personality from among the following:

Clear or Secure	The Announcement Group or Fleet ID is forced to that particular transmit mode.
Select	The user is allowed to select the Secure transmit modes using the radio's two-position concentric switch.

Size Code *A system key or FTR key is required to access this field.* Use the UP/DOWN arrow keys to choose the Size Code for this fleet. The Size Code determines the maximum number of fleets, subfleets and individual IDs allowed. Valid size codes are: A, B, C, D, E, F, G, H, I, J, K, M, O and Q. For any size code, the subfleets for Fleetwide and Dynamic Regrouping are always available.

**Note:** *The size code and fleet ID chosen must match the programming of the Central Controller.*

Size Code	Prefix	Fleet	Subfleet	Individual ID
A	0 - 7	00 - 7F	A - C	000 - 00F
B	0 - 7	00 - 0F	A - G	000 - 03F
C	0 - 7	00 - 07	A - G	000 - 07F
D	0 - 7	00 - 00	A - O	000 - 1FF
E	0 - 7	00 - 3F	A - C	000 - 01F
F	0 - 7	00 - 1F	A - G	000 - 01F
G	0 - 7	00 - 1F	A - C	000 - 03F
H	0 - 7	00 - 0F	A - C	000 - 07F
I	0 - 7	00 - 07	A - C	000 - 0FF
J	0 - 7	00 - 03	A - G	000 - 0FF
K	0 - 7	00 - 01	A - O	000 - 0FF
M	0 - 3	00 - 00	A - O	000 - 3FF
O	0 - 1	00 - 00	A - O	000 - 7FF
Q	0 - 0	00 - 00	A - O	000 - FFF

Individual ID

Contains the Individual ID number that uniquely identifies your radio on a particular system. Valid IDs range between 1 and FFFE. The decimal equivalent of the Individual ID is used for your radio's Private Conversation Call ID (7 + ID#), interconnect land-to-portable unit calls (7 + ID #) and interconnect land-to-portable talkgroup calls (7 + ID #).

*For Type II Trunking, your radio will have a single Individual ID for each system independent of the number of talkgroups, user groups or personalities it is affiliated with on that system.*

Failsoft Type

When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation. Depending on the type of system, there will be different choices for Failsoft operation:

Disabled	No failsoft used.
Personality	Uses the Announcement Group Failsoft frequency for all talkgroups within the personality.
Talkgroup	The frequency is determined by the talkgroup selected and is entered in the TRUNKING TALKGROUP screen ( <b>F4/F4/F4/F7</b> ). <i>Failsoft by Talkgroup is NOT available with WAC AMSS type.</i>
WAC AMSS	The Failsoft frequency depends on which AMSS site the radio is using at the time. The frequencies are entered using the <b>F6</b> function key.

Time-Out Timer

Use the UP/DOWN arrow keys to select the desired Time-Out Timer (TOT) value for this personality. The TOT determines the amount of time the radio can continuously transmit before it must be de-keyed. When the time is about up the radio beeps and then stops transmitting. Each personality may choose one of four different TOT values. The four values for the radio can be changed on the RADIO WIDE OPTIONS MENU (F4/F3/F2/F9).

Private Call Type

Use the UP/DOWN arrow keys to select the desired Private Call type from among the following:

PC II	Permits calls between fleets and sends an initiator ID so that the person receiving the call will know who sent it (Type II and Iii personalities).
Enhanced PC	Telephone-like operation.
Disabled	Deactivates the Private Call feature for this personality.

**Note:** Radio controls may require additional setup for your Private Call configuration. Refer to the RADIO WIDE BUTTON/SWITCH CONFIGURATION MENU (F4/F3/F3) help screen for details.

Operation

*This field will be visible only if the Private Call Type field is set to a value other than Disabled. If this field is set to Resp Only, the Call ID List field on this screen will NOT be visible.* Use the UP/DOWN arrow keys to select the operation of the Private Call feature for this personality from among the following:

Response Only	Allows the radio to only accept calls.
List Only	Allows the user to make calls from the page list.
Unlimited	<i>Requires full keypad.</i> Allows the user to make calls from the call list and from the keypad, and to modify the Call ID list.

Call Alert Operation

Use the UP/DOWN arrow keys to select Call Alert (Page) operation for the current personality. Call Alert allows the operator to receive and transmit pages either by typing in a six-digit decimal ID (Unlimited) or by selecting one of the IDs in the Trunking Call ID list (List Select).

Response Only	Allows the radio to accept pages only.
List Only	Allows the user to send pages from the page list.
Unlimited	<i>Requires full keypad.</i> Allows the user to send pages from the page list and from the keypad. This also allows the radio user to modify the page ID list.
Disabled	No Call Alert operation is allowed. Disables paging facilities.

**Note:** Radio controls may require additional setup for your Call Alert configuration. Refer to the RADIO WIDE BUTTON/SWITCH CONFIGURATION MENU (F4/F3/F3) help screen for details.

Phone Interconnect

Use the UP/DOWN arrow keys to select the type of Phone Interconnect for this personality. This option allows the radio to initiate and receive land-to-portable telephone calls and specifies the type of Interconnect. The choices are:

Answer Only	Allows the radio to accept calls only.
List Only	Allows the radio to answer and initiate calls only from the phone list.
Unlimited	Allows the radio to make calls both from the phone list and the keypad. The stored phone number list may also be modified from the keypad.
Disabled	No phone operation is allowed.

**Note:** *Radio controls may require additional setup for your Phone Interconnect configuration.* Refer to the RADIO WIDE BUTTON/SWITCH CONFIGURATION MENU (F4/F3/F3) help screen for details.

Hot Keypad (DTMF)

Use the UP/DOWN arrow keys to enable/disable Hot Keypad (DTMF while transmitting) operation for the current personality. When this feature is enabled, the keypad is live during all dispatch operation. Pressing any digit between 0 (zero) and 9, “\*”, or “#” will cause that digit to be transmitted.

Status

Use the UP/DOWN arrow keys to enable/disable the transmission of pre-determined Status messages. This feature lets the user send a status message to the dispatcher to inform the dispatcher of the current state of the radio and its owner (“ENROUTE” or “LUNCH” for instance.)

**Note:** *Radio controls may require additional setup for your Status configuration.* Refer to the RADIO WIDE BUTTON/SWITCH CONFIGURATION MENU (F4/F3/F3). In addition, Status number and name aliasing can be configured on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9).

Message

Use the UP/DOWN arrow keys to enable/disable the transmission of pre-determined canned messages. This feature lets the radio user send messages to the dispatcher. Message transmissions indicate a temporary condition and/or a response to a query from the dispatcher (“PLS CALL” or “10-4” for instance).

**Note:** *Radio controls may require additional setup for your Message configuration.* Refer to the RADIO WIDE BUTTON/SWITCH CONFIGURATION MENU (F4/F3/F3). In addition, Status number and name aliasing can be configured on the TRUNKING SYSTEM OPTIONS screen (F4/F4/F3/F9).

Call ID List	<p><i>This field will not be visible if the Operation field is set to Resp Only. Use the UP/DOWN arrow keys to select the Call List ID for the current personality. This is the number of the Call ID list that this personality will use for Private Call and Call Alert. <b>The Private Call and Call Alert features must have a call list assigned for Unlimited and List operation. The Call ID List cannot be set to None when Call Operation is List or Unlimited.</b></i></p> <p><b>Note:</b> <i>Radio controls may require additional setup for your Private Call configuration on the RADIO WIDE BUTTON/SWITCH CONFIGURATION screen (F4/F3/F3). Refer also to the TRUNKING WIDE CALL LIST (F4/F4/F6) help screen.</i></p>
Scan List	<p>Use the UP/DOWN arrow keys to select the Scan List to be used for this personality. To change or view the scan list, access the SCAN LIST screen (F4/F3/F5). Trunking personalities may use Subfleet, Priority Monitor and Talkgroup type scan lists.</p> <p><b>Note:</b> <i>Radio controls may require additional setup for your Scan configuration on the RADIO WIDE BUTTON/SWITCH CONFIGURATION screen (F4/F3/F3).</i></p>
F/W Failsoft	<p><i>This field will be visible only when the Protocol Type is Iii, and the Failsoft Type is Subfleet.</i></p>
F/W Failsoft Freq (MHz)	<p><i>This field will be visible only when the Protocol Type is Iii, and the Failsoft Type is Subfleet.</i></p>
A/G Failsoft	<p><i>This field will be visible only when the Protocol Type is II, and the Failsoft Type is Talkgroup. Use the UP/DOWN arrow keys to enable/disable Failsoft for this talkgroup. When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation. If the radio is set to Failsoft by Talkgroup, the radio will use these frequencies to transmit and receive on.</i></p>
A/G Failsoft Frequency (MHz)	<p><i>This field displays only when the Protocol Type is II, and the Failsoft Type is Talkgroup. Enter the Failsoft Frequency directly in MHz.</i></p>
F/S Frequency (MHz)	<p>Enter the frequency (in MHz) for Failsoft operation; if the repeater system fails, the radio will go into Failsoft mode (if the Failsoft feature has been enabled). This means the radio will act like a Conventional talkaround radio, transmitting and receiving on the same frequency, referred to as the Failsoft frequency.</p>

# WAC AMSS Failsoft D D D F

From the MAIN MENU, press **F4** thrice and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Frequency.	
...TRUNKING:PERS:WAC FAILSOFT			
Personality.....1			
WAC AMSS FAILSOFT -----			
Number	Status	Frequency	Number      Control Channel
-----			-----
1	Enabled	851.01250	1      851.01250
2	Disabled		
3	Disabled		
4	Disabled		
5	Enabled	851.01250	
6	Disabled		
7	Disabled		
8	Disabled		
F1	F2	F3	F4      F5      F6      F7      F8      F9      F10
HELP			EXIT

*This screen can be accessed only if a System Key is present, the Coverage Type field on the TRUNKING PERSONALITY screen (F4/F4/F3) and the Failsoft Type field on the TRUNKING PERSONALITY screen (F4/F4/F4) are set to WAC AMSS. It is used to enter Failsoft frequencies used by Wide Area AMSS systems.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Personality

Displays the number of the current personality.

Status

Use the UP/DOWN arrow keys to enable/disable Failsoft for the current Control Channel. If this field is enabled and the Repeater System fails, the radio will go into Failsoft mode. This means the radio will act like a conventional talkaround radio, transmitting and receiving on the same frequency.

Frequency

Enter the WAC AMSS frequency for Failsoft operation directly in MHz. If the radio is set to Failsoft by Talkgroup, it will use these frequencies to transmit and receive on. *Failsoft by Talkgroup is NOT compatible with WAC AMSS.*

Control Channel

Enter the Control Channel frequency directly in MHz. *Up to eight frequencies may be specified with WAC AMSS enabled.*

# Trunking Subfleets D D D G

From the MAIN MENU, press **F4** thrice and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:			
...CHANGE/VIEW:TRUNKING:PERS:SUBFLEET			
Personality.....1			
TRUNKING SUBFLEETS -----			
#	Subflt	Failsoft	F/S Frequency Strapping
-----	-----	-----	-----
1	001		
F1 HELP	F2 ADD SUBFLEET	F3	F4
		F5 DELETE SUBFLEET	F6
			F7
			F8
			F9
			F10 EXIT

### Protocol Type Iii

*This screen can be accessed from the TRUNKING PERSONALITY screen (F4/F4/F4) only if the Protocol Type field on that screen is set to Iii.*

This screen is used to create a list of subfleets that will use each personality. *If the radio is a Secure-equipped radio, strapping fields will be visible and Secure strapping can be set up for each personality.* The personality usually has 16 positions (the number of positions on the rotary switch), indicated by the numbers 1 through 16. The Announcement Talkgroup is usually in the sixteenth position. Once the subfleets are entered, they are assigned to the Zone/System or Channel/Subfleet selector at the ZONE/CHANNEL ASSIGNMENT screen (F4/F8).

Press **Tab** to select the desired field, or press the desired function key (F1 - F10). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - ADD SUBFLEET

Adds a subfleet. *This operation is not allowed unless a system key or hardware key is present.*

F5 - DELETE SUBFLEET

Deletes a subfleet. You will be prompted before the subfleet is actually deleted.

## Field Definitions

Personality	Displays the number of the current personality.
Subfleet	This screen is used to enter subfleets that will use each personality. Use the <b>F2/F5</b> keys to add/delete subfleets. Once the subfleets are entered, they are assigned to a Zone/System and a Channel/Subfleet selector position on the ZONE/CHANNEL ASSIGNMENT screen ( <b>F4/F8</b> ).
Failsoft	Use the UP/DOWN arrow keys to enable/disable Failsoft for this subfleet. When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation. If the radio is set to Failsoft by Subfleet, the radio will use these frequencies to transmit and receive on.
F/S Frequency	Enter the Failsoft Frequency directly in MHz. <i>A transmit and receive frequency each are required if the system is UHF or VHF.</i>
Strapping	<i>This field will be visible only if the radio (or associated codeplug) is Secure-equipped.</i> This field configures the transmit mode of the subfleet. If set to Clear or Secure, the subfleet is forced to that particular transmit mode. When set to Select, the user is allowed to choose between Secure and Clear transmit modes using the radio's two-position concentric switch.

# Trunking Talkgroups D D D G

From the MAIN MENU, press **F4** thrice and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Type.							
MAIN:CHANGE/VIEW:TRUNKING:PERS:TLK GRP									
Personality.....1									
TRUNKING TALKGROUPS -----									
#	Tlk Grp	Failsoft	F/S Frequency	Strapping	TX Voice/ Signal Type	Key Select			
1	001			Clear	Analog				
F1 HELP	F2 ADD TLK GRP	F3	F4	F5 DELETE TLK GP	F6	F7	F8	F9	F10 EXIT

### Protocol Type III

*This screen can be accessed from the TRUNKING PERSONALITY screen (F4/F4/F4) only if the Protocol Type field on that screen is set to II.*

This screen is used to create a list of talkgroups. A Talkgroup is a logical grouping of members of an organization. This is the Trunking equivalent to the conventional channel. *If the radio is a Secure-equipped radio, strapping fields will be visible and Secure strapping can be set up for each personality.* The personality usually has 16 positions (the number of positions on the rotary switch), indicated by the numbers 1 through 16. The Announcement Talkgroup is usually in the sixteenth position. Once the Talkgroups are entered, they are assigned to the Zone/System or Channel/Subfleet selector at the ZONE/CHANNEL ASSIGNMENT screen (F4/F8).

Press **Tab** to select the desired field, or press the desired function key (F1 - F10). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - ADD TLK GRP

Adds a talkgroup. *This operation is not allowed unless a system key or hardware key is present.*

F5 - DELETE TLK GRP

Deletes a talkgroup. You will be prompted before the subfleet is actually deleted.

## Field Definitions

Personality	Displays the number of the current personality.
Tlk Grp	This screen is used to enter subfleets that will use each personality. Use the <b>F2/F5</b> keys to add/delete talkgroups. Once the talkgroups are entered, they are assigned to a Zone/System and a Channel/Subfleet selector position on the ZONE/CHANNEL ASSIGNMENT screen ( <b>F4/F8</b> ). The personality may have up to 16 talkgroups, including an Announcement Group and or a Dynamic Regrouping talkgroup.
Failsoft	Use the UP/DOWN arrow keys to enable/disable Failsoft for this talkgroup. When the Central Site Controller fails in a Trunked system, the system goes into Failsoft operation. If the radio is set to Failsoft by Talkgroup, the radio will use these frequencies to transmit and receive on.
F/S Frequency	Enter the Failsoft Frequency directly in MHz. <i>A transmit and receive frequency each are required if the system is UHF or VHF.</i>
Strapping	<i>This field will be visible only if the radio (or associated codeplug) is Secure-equipped.</i> This field configures the transmit mode of the talkgroup. If set to Clear or Secure, the talkgroup is forced to that particular transmit mode. When set to Select, the user is allowed to choose between Secure and Clear transmit modes using the radio's two-position rocker switch.
Tx Voice/Signal Type	This field indicates the type of signal (analog or digital) for this talkgroup.
Key Select	Specify the multikey encryption key to be used for the selected talkgroup.

# Trunking Emergency Data Configuration D D D H

From the MAIN MENU, press **F4** thrice and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Type.
MAIN:CHANGE/VIEW:TRUNKING:PERS:EMER	
EMERGENCY DATA CONFIGURATION -----	
Protocol Type.....II	Revert Announcement Group...None
Emergency Call.....Disabled	
Emergency Alarm.....Enabled	
Console Ack Required...Disabled	
Retry Counter.....1	Revert Talkgroup.....001
Tactical.....Enabled	Astro Strapping.....Analog
Revert PTT ID.....Disabled	Strapping.....Clear
F1 HELP	F2 F3 F4 F5 F6 F7 F8 F9 F10 EXIT

## Protocol Type II

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Type.
MAIN:CHANGE/VIEW:TRUNKING:PERS:EMER	
EMERGENCY DATA CONFIGURATION -----	
Protocol Type.....IIIi	Revert Size Code.....A
Access Type.....Fast	Revert Fleet ID.....0001
Emergency Call.....Disabled	
Emergency Alarm.....Disabled	
Retry Counter.....1	Revert Subfleet.....001
Tactical.....Enabled	Astro Strapping.....Analog
Revert PTT ID.....Disabled	
F1 HELP	F2 F3 F4 F5 F6 F7 F8 F9 F10 EXIT

## Protocol Type III

This screen is used to configure the Emergency feature for the current personality. Each Type II/III personality may have a unique configuration if necessary. *The Emergency button must be enabled in the RADIO WIDE BUTTON/SWITCH MENU (F4/F3/F3). In addition, Silent Emergency must be configured on the RADIO WIDE CONFIGURATION screen (F4/F3/F2/F7).*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### Protocol Type

Use the UP/DOWN arrow keys to select the Trunking Protocol Type for the current personality.

Type II	An enhanced version of the original Trunked Signalling protocol that provides additional fleet management flexibility for a given system via an expanded signalling format.
Type Iii	A hybrid of Type I and II signalling systems. This Trunking protocol type allows Type I radios to communicate with Type II radios on the same voice channel.

### Access Type

*This field will be visible only if the Protocol Type field is set to Iii.* Use the UP/DOWN arrow keys to select the Trunking Access Type. This determines how the radio will access a Type II/Iii system.

- Select Tx Fast/Rx Fast for use with fast access systems and Tx Fast/Rx Slow for slow access protocol emergency subfleets.
- New Type I radios operating on fast access systems should be set for fast access.
- Type Iii radios which have to communicate on systems with slow radios should be set to slow access.

**Note:** *This information must be coordinated with your system manager to ensure proper operation.*

### Emergency Call

Use the UP/DOWN arrow keys to enable/disable this option. Emergency Alarm allows the operator to press the Emergency button to send an alarm to the dispatcher.

The Emergency Call condition is entered by pressing a button configured to initiate an emergency. All subsequent PTT transmissions while in the Call state will be made with high priority access to a voice channel. Emergency Alarm and Emergency Call may both be enabled, in which case the Call state is entered when PTT is pressed.

### Emergency Alarm

Use the UP/DOWN arrow keys to enable/disable this option. Emergency Alarm allows the operator to press the Emergency button to send an alarm to the dispatcher. Emergency Alarm is a coded transmission made on the control channel in response to pressing a button configured to initiate an emergency. These alarm transmissions will be sent until:

- the control channel acknowledges the alarm;
- the console dispatcher acknowledges the alarm (if console ack is enabled); or
- the alarm retry counter is exhausted.

If normal alarm operation is selected, the display will flash emergency and valid key chirp will be heard when the alarm condition is entered. Four full beeps will be heard when the alarm condition is acknowledged.

If silent alarm is selected, there will be no display or audible indication when the alarm condition is entered. Nor will there be any indication of alarm acknowledgment. In addition, the radio will mute the receiver audio so that no radio traffic is heard. *This feature is one of the necessary components for Hot Mic Emergency to function properly.*

Console Acknowledgment  
Required

*This field will be visible only if the Emergency Alarm field is set to Enabled.* Use the UP/DOWN arrow keys to enable/disable this option. If a Console Acknowledge is required, an Emergency Alarm is not considered successful unless a Dispatcher Acknowledge is received. When an Emergency Alarm is not successful, the full four-beep Acknowledge Tone is not sounded and the alarm is automatically sent again until the number of retries specified is exhausted.

Retry Counter

*Emergency Alarm must be enabled for this field to be visible.* Use the UP/DOWN arrow keys to select the number of Emergency transmissions to retry should the initial transmission fail. If an unlimited number of retries is desired, select 0 (that is, Infinite). Otherwise, enter a value between 1 and 255.

Normally if the radio is unsuccessful in sending a transmission, it will retry for one ISW sequence before quitting. For Emergency Alarms, however, the radio will retry for the number of ISW sequences specified by the Retry Counter.

Tactical

Use the UP/DOWN arrow keys to enable (Tactical) or disable (Non-Tactical) this emergency option. If this field is set to Enabled, Emergency Alarms and Calls are made on the selected talkgroup/subfleet unless:

- Announcement Group/Fleet is selected; or
- Dynamic Regrouping Talkgroup/Subfleet is selected and there is no valid dynamic ID, in which case the default Talkgroup/Subfleet is used.

If this field is set to Disabled, the radio uses the default Talkgroup and default Announcement group for emergency transmissions.

Revert PTT-ID

Use the UP/DOWN arrow keys to enable/disable the default Emergency PTT-ID option. If this feature is enabled, the default Talkgroup/Subfleet or Announcement Group/Fleet-wide transmissions will be in PTT-ID style.

Revert Size Code

Use the UP/DOWN arrow keys to choose the Size Code for this personality. Valid Size Codes are: A, B, C, D, E, F, G, H, I, J, K, M, O and Q. The Size Code determines the maximum number of fleets, subfleets and individual IDs allowed.

**Note:** *The Size Code and Fleet ID chosen must match the programming of the Central Controller.*

Revert Fleet ID

The Fleet ID is a three-digit hexadecimal number where the first digit is the Prefix and second two digits represent the Fleet. For any size code, the subfleets for Fleetwide and Dynamic Regrouping are always available.

Size Code	Prefix	Fleet	Subfleet	Individual ID
A	0 - 7	00 - 7F	A - C	000 - 00F
B	0 - 7	00 - 0F	A - G	000 - 03F
C	0 - 7	00 - 07	A - G	000 - 07F
D	0 - 7	00 - 00	A - O	000 - 1FF
E	0 - 7	00 - 3F	A - C	000 - 01F
F	0 - 7	00 - 1F	A - G	000 - 01F
G	0 - 7	00 - 1F	A - C	000 - 03F
H	0 - 7	00 - 0F	A - C	000 - 07F
I	0 - 7	00 - 07	A - C	000 - 0FF
J	0 - 7	00 - 03	A - G	000 - 0FF
K	0 - 7	00 - 01	A - O	000 - 0FF
M	0 - 2 - 4 - 6	00 - 00	A - O	000 - 3FF
O	0 - 4	00 - 00	A - O	000 - 7FF
Q	0 - 0	00 - 00	A - O	000 - FFF

Revert Subfleet

Use the UP/DOWN arrow keys to make your selection or enter a hexadecimal value directly. The possible Revert Subfleet IDs and the corresponding Revert Fleet IDs are listed in the table above. The Revert Subfleet ID is a one-character ID which corresponds to the Fleet. This is the subfleet to be used during an emergency for the current personality.

Revert Announcement Group

Enter the Emergency Default Announcement Talkgroup in this field. This field contains the Emergency User Talkgroup for Announcements during an emergency for the current personality. The Emergency Default Announcement Talkgroup is a three-digit hexadecimal number. While in the emergency call state with tactical emergency disabled, your radio will monitor this talkgroup for fleetwide announcement calls.

Revert Announcement Group (or Revert Fleet ID) Strapping

Use the UP/DOWN arrow keys to make your selection. This field configures the transmit mode of Emergency Announcement Group or Emergency Fleet ID.

Clear or Secure	The Emergency Announcement Group or Fleet ID is forced to that particular transmit mode.
Select	The user is allowed to select the Secure or Clear transmit modes via the switch or button assigned to Clear/Secure Tx operation..

ASTRO Strapping (for Revert Announcement Group)

Use the UP/DOWN arrow keys to set the ASTRO strapping for the Revert Announcement Group. The settings are Analog or Digital.

ASTRO Strapping (for Revert Fleet ID)

Use the UP/DOWN arrow keys to set the ASTRO strapping for the Revert Fleet ID. The settings are Analog or ASTRO.

Revert Talkgroup (for Revert Subfleet) Strapping

Use the UP/DOWN arrow keys to make your selection. This field configures the transmit mode of Emergency Talkgroup or Emergency Subfleet.

Clear or Secure	The Emergency Talkgroup or the Emergency Subfleet is forced to that particular transmit mode.
Select	The user is allowed to select the Secure or Clear transmit modes using the two-position concentric switch or button programmed for Clear/Secure Tx operation.

ASTRO Strapping (for Revert Talkgroup)

Use the UP/DOWN arrow keys to set the ASTRO strapping for the Revert Talkgroup. The settings are Analog or Digital.

ASTRO Strapping (for Revert Subfleet)

Use the UP/DOWN arrow keys to set the ASTRO strapping for the Revert Subfleet. The settings are Analog or Digital.

Revert Talkgroup (or Revert Subfleet)

Enter a three-digit hexadecimal number for Emergency Default Talkgroup. This field contains the Emergency User Talkgroup for use during an emergency for the current personality.

**Note:** Only even numbered talkgroups are compatible with Priority Monitor.

# Trunking Personality Options

## DDDI

From the MAIN MENU, press **F4** thrice and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
MAIN:CHANGE/VIEW:TRUNKING:PERS:OPT									
Personality.....1 TRUNKING PERSONALITY OPTIONS -----  Conversation Type.....Message  Access Type.....Fast  Talk Permit Tone.....Enabled Proper Code Detect.....Enabled Dispatcher Interrupt.....Disabled System Wide Transmit.....Disabled									
F1 HELP	F2	F3 PREV PERS	F4 NEXT PERS	F5	F6 PREF SITES	F7	F8	F9	F10 EXIT

This screen is used to view and edit additional information for the current Trunking personality. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F3 - PREV PERS**

Accesses the previous personality.

**F4 - NEXT PERS**

Accesses the next personality.

**F6 - PREF SITES**

*A system key or FTR key must be present and the Coverage Type field must be set to SmartZone on the TRUNKING SYSTEM screen (F4/F4/F3) for this function to be visible. This function allows you to program the Preferred Status list linked to the current personality.*

### Field Definitions

Personality

Use the UP/DOWN arrow keys to scroll through the available personalities. Alternately the **F3/F4** function keys can be used to navigate through the available personalities.

Conversation Type

Use the UP/DOWN arrow keys to select the Trunking Conversation type. The available choices are:

Message Trunked	After the initiator de-keys the radio, the voice channel stays active (hangtime) so that other members of the talkgroup can respond on the same channel. If a radio in the talkgroup transmits during another user's transmission, he or she will interrupt the original transmission.
Transmission Trunked	No hangtime and no talk-over. When a radio is de-keyed, the channel is immediately de-allocated and reassigned. If a user tries to talk over an active channel, the radio will not key until the channel is clear.
PTT-ID	PTT-ID systems are similar to message conversation type systems with hangtime and talk-over, but they send an ID code to the controller when PTT is pressed. After transmission of the ID, the radio goes back to the voice channel to talk to the other users.

Access Type

Use the UP/DOWN arrow keys to select the Trunking Access type:

Slow	Refers to Rx Slow utilizing the high speed acknowledgments for all channel grants. [Rx=Slow, Tx=Fast]
Fast	Refers to the elimination of the high speed acknowledgment which improves channel access time. [Rx=Fast, Tx=Fast]

**Note:** This information must be coordinated with your system manager to ensure proper operation on the system.

Talk Permit Tone

Use the UP/DOWN arrow keys to enable/disable Talk Permit Tones. When this feature is enabled, a Talk Permit Tone beep will be made every time a transmission is made. The tone indicates that the user may start talking.

Proper Code Detect

*This field will be visible only if a Secure-capable codeplug is installed.* Use the UP/DOWN arrow keys to enable/disable this feature. When this feature is enabled, the speaker will unmute on Secure data only if it is encrypted with the correct key.

Dispatcher Interrupt

*This option is available only if the Private Call Type field on the TRUNKING PERSONALITY screen is set to a value other than Disabled.* Use the UP/DOWN arrow keys to enable/disable the Dispatcher Interrupt option for the current personality.

System Wide Transmit

*This option is available only for Mobiles.* Use the UP/DOWN arrow keys to enable/disable System Wide Transmit. *The System Wide Transmit field cannot be set to Disabled if there is a talkgroup entry which has 'SYS'.*

If this feature is enabled, the user will be allowed to enter 'SYS' (System Wide Talkgroup) into the talkgroup list of the corresponding personality.

If this feature is disabled, the user will not be allowed to enter 'SYS' (System Wide Talkgroup) into the talkgroup list of the corresponding personality.

## SmartZone Preferred Sites

# DDDI F

From the MAIN MENU, press **F4** thrice, **F9** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.									
...TRUNKING:PERS:OPT:PREFERRED SITES										
SMARTZONE PREFERRED SITES ----- Ignore Site Resource Preference.....Disabled  <table border="1"> <thead> <tr> <th>#</th> <th>Site ID</th> <th>Pref Status</th> </tr> <tr> <th>-</th> <th>-----</th> <th>-----</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>None</td> </tr> </tbody> </table>		#	Site ID	Pref Status	-	-----	-----	1	1	None
#	Site ID	Pref Status								
-	-----	-----								
1	1	None								
F1 HELP	F2 ADD ITEM	F3	F4	F5 DELETE ITEM	F6	F7	F8	F9	F10 EXIT	

*A system key or FTR key must be present and the Coverage Type field must be set to SmartZone on the TRUNKING SYSTEM screen (F4/F4/F3) if this screen is to be accessed. This screen is used to program the Preferred Site Status List. You may assign preferences for up to 8 sites for each personality associated with a SmartZone system.*

## Function Key Descriptions

F2 - ADD ITEM

Adds a Preferred Site.

F5 - DELETE ITEM

Deletes a Preferred Site. You will be prompted for confirmation before the Site is actually deleted.

## Field Definitions

Ignore Site Resource Preference

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio ignores site resource information (that is, if the site has ASTRO, 12 KB Secure, or Analog Clear repeaters received in Adjacent Control Channel OSWs). If this feature is disabled, the radio will select sites based on this site resource information. For example, if a radio has selected an ASTRO TG, it will select sites with ASTRO repeaters over sites with only Analog repeaters.

Site ID

The value specifies the ID of the site which has preferred status. The ID may range from 1 to 64.

Prefer Status

Use the UP/DOWN arrow keys to make your selection. This field denotes the value of the preferred site status for the site.

None	The site is given no preference. If the site is not listed here, the radio automatically assigns it no preference.
Least Preferred	The site will be avoided unless it is the only usable site for operation.
Preferred	The site will be used over all non-preferred sites with similar signal strength.
Always Preferred	The site will be used over all non-preferred sites with similar signal strength even if the site loses communication with the Zone Controller (that is, enters site Trunking).

# Trunking Call List Table

## D D E

From the MAIN MENU, press **F4** twice and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Enter or Scroll to Select List.				
MAIN:CHANGE/VIEW:TRUNKING:CALL LIST									
Call List..... 1					CALL LIST TABLE				
-----					-----				
#	Call ID	Call Text	#	Call ID	Call Text	#	Call ID	Call Text	
--	-----	-----	--	-----	-----	--	-----	-----	
1	-----	CAL 1							
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD LIST	PREV LIST	NEXT LIST	DELETE LIST	ADD CALL ID	DELETE CALL ID			EXIT

This screen is used to edit Trunking Call IDs and their associated names (or aliases). *The number of characters for the name will be determined by the display capability of the radio.* Each Trunking system may have a unique call list. *Each list may have a maximum of 19 IDs.*

**Note:** The call list defined on this screen are assigned to the Trunking personalities on the TRUNKING PERSONALITY screen (**F4/F4/F4**). *This assignment must be made or else the list will not be accessible.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

F2 - ADD LIST

Adds a call list.

F3 - PREV LIST

Accesses the previous list.

F4 - NEXT LIST

Accesses the next list.

F5 - DELETE LIST

Deletes a call list. You will be prompted before the list is actually deleted.

**Note:** The call list being deleted may be referenced by other fields. *Deleting such a call list may cause the radio to work improperly.*

F6 - ADD CALL ID

Adds a new call ID.

F7 - DELETE CALL ID

Deletes a call ID. You will be prompted before the ID is actually deleted.

## Field Definitions

Call List

Use the UP/DOWN arrow keys or the **F3/F4** keys to scroll through and select a specific call list. Alternatively, the **F3/F4** function keys may also be used to scroll through the lists. Each Trunking personality may have a unique call list. *Each list may have a maximum of 19 IDs.*

**Note:** The call lists defined on this screen are assigned to a Trunking personalities on the TRUNKING PERSONALITY screen (**F4/F4/F4**). *This assignment must be made or else the list will not be accessible.*

Call ID

Enter the six-digit (decimal) Call ID (or Universal ID) for this member of the call list. The Call ID is used in Private Call or Call Alert to uniquely identify the individual to be called or paged.

Call Text

Enter the alphanumeric name for this Call ID. The name will appear on the radio display to facilitate ease of operation.

## Conventional Menu

From the MAIN MENU, press **F4** and then **F6** to access this screen.

# D F

MOTOROLA Radio Service Software ASTRO PORTABLE Model:  MAIN:CHANGE/VIEW:CONV	Select Function F1 - F10.								
CONVENTIONAL MENU -----									
F1 - HELP F2 - Conventional Radio Wide Configuration F3 - Conventional Personalities, Options F4 - MDC Systems, Options F5 - ASTRO Systems, Options F6 - MODAT F7 - Auxiliary Systems F8 - Conventional Message Alias List F9 - Conventional Status Alias List F10 - EXIT, Return to Change/View Menu									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CONV	CONV	MDC	ASTRO	MODAT	AUX	MSG	STATUS	EXIT
	WIDE OPT	PERS	CONFIG	CONFIG		SYSTEMS	ALIAS	ALIAS	

This screen allows you to navigate to the Conventional edit screens.  
*The options in these menus pertain only to Conventional radio features.*

## Function Key Descriptions

F2 - CONV WIDE OPT (Conventional Radio Wide Options)	Applicable to all Conventional channels and includes options such as monitor type.
F3 - CONV PERS (Conventional Personality)	This screen is used to define Conventional frequencies, coded squelch type (PL/DPL), and Conventional options (phone, scan, etc.) and signalling (MDC) permitted on each channel.
F4 - MDC CONFIG (MDC Configuration)	<i>This function will be visible only when a radio with MDC capabilities has been read. Not all radios have this capability.</i> This screen is used to define the MDC signalling configuration for each Conventional personality. Each system can be defined with a unique PTT-ID, emergency operation and signalling timing options.
F5 - ASTRO CONFIG	Brings up a screen where you can define ASTRO system and signalling configuration and different options that are applicable to ASTRO radios.
F6 - MODAT	<i>This function will be visible only when a radio is MODAT capable (that is, the MODAT software option has been purchased for the radio.</i> Brings up a screen where you can define MODAT parameters.
F7 - AUX SYSTEMS (Auxiliary Systems)	Takes you to a screen where you can define Singletone system information and Singletone list frequencies.
F8 - MSG ALIAS (Message Alias)	Brings up a screen where you can change and view the parameters associated with the MDC/ASTRO System Message Alias.
F9 - STATUS ALIAS	Brings up a screen where you can change and view the parameters associated with the MDC/ASTRO System Status Alias.

## Conventional Radio Wide Options

# D F B

From the MAIN MENU, press **F4**, **F6** and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.								
MAIN:CHANGE/VIEW:CONV:WIDE OPTIONS									
<p>CONVENTIONAL RADIO WIDE OPTIONS</p> <p>-----</p> <p>Monitor Type.....Open Squelch          Latch Enable Tone.....Enabled          Latch Enable Time (sec).....2.0          Smart PTT Retry Timer (ms).....275          Smart PTT Quick Key Timer (ms).....500          Hub Defeats PL.....Disabled          Direct Frequency Enabled.....Disabled          One Touch Button 1 Feature.....Phone          One Touch Button 2 Feature.....Status          One Touch Button 3 Feature....Call Alert          One Touch Button 4 Feature.....Message</p>									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

The options and parameters on this screen apply to all Conventional modes. Other Radio wide options that apply to both Conventional and Trunking operation are located on the RADIO WIDE OPTIONS screen (**F4/F3/F2**). Trunking options are located on the TRUNKING RADIO WIDE OPTIONS screen (**F4/F4/F2**).

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### Monitor Type (Portables Only)

Use the UP/DOWN arrow keys to make your selection. This option determines how the radio unmuters when the monitor button is pressed. Silent Monitor, also called PL Defeat, allows the user to monitor the channel before transmitting. Valid options are:

Open Squelch	The radio will always unmute, even on noise, when the monitor button is pressed.
Silent	The radio will be carrier squelched in Monitor mode.

### Latch Enable Tone (Portables Only)

Use the UP/DOWN arrow keys to make your selection. The monitor button may be momentarily pressed, or may be latched by pressing the monitor button for a short period of time (Latch Enable Time). This option causes the radio to give a short beep each time the Permanent Monitor function is enabled. Permanent monitor is cancelled by pressing the monitor button a second time.

### Latch Enable Time (sec) (Portables Only)

Use the UP/DOWN arrow keys to make your selection or enter a value directly. Select 0 (zero) to Disable this option. The monitor button may be momentarily pressed, or may be latched by pressing the monitor button for a short period of time (Latch Enable Time). Permanent monitor is cancelled by pressing the monitor button again. Valid values range from 0 (zero) to 6 seconds in 0.5 second increments.

Smart PTT Retry Timer (ms)	Use the UP/DOWN arrow keys to select a value for Smart PTT Retry Timer. When Smart PTT is enabled, this field adjusts the time interval at which the radio will sample for a clear channel. The valid range of values is 0 (zero) to 5000 ms in 25-ms increments.
Smart PTT Quick Key Timer (ms)	Use the UP/DOWN arrow keys to select a value for Smart PTT Retry Timer. When Smart PTT is enabled, a quick key (double press) of the PTT button can override the feature and cause the radio to transmit although the channel is busy. The timer determines the maximum amount of time between PTT presses, that is, how fast the user must press the PTT button to override. The valid range of values is 100 to 5000 ms in 100-ms increments.
Hub Defeats PL	<i>This feature is applicable to portable radios only when a Vehicular Adapter is used.</i> Use the UP/DOWN arrow keys to enable/disable the Hang-Up Box (HUB) Defeats PL feature. When Hub Defeats PL is enabled, PL/DPL and Net ID for ASTRO will be disabled when the microphone is removed from the hang-up box. In the Secure mode, the radio will go out of Proper Code Detect. This allows for monitoring of a Conventional channel to prevent transmission during another conversation.
Direct Frequency Enabled	Use the UP/DOWN arrow keys to enable/disable this feature. If the Direct Frequency flag is enabled, the user can enter the Direct Frequency in the CONVENTIONAL PERSONALITY screen (F4/F6/F3) and modify it. If the Direct Frequency flag is disabled, the Direct Frequency will be copied from the Conventional Rx frequency.
One Touch Buttons 1- 4 Feature	Use the UP/DOWN arrow keys to select the desired One Touch Button feature. This field specifies which feature is entered upon a One Touch Button press. <i>Based upon the radio model and purchased options, all features may not be available for all models.</i> The available options are: Disabled, Phone, Select Call, Call Alert, Status and Message.  Pressing a One Touch Button enables the selected feature according to the operation described below. Pressing the One Touch Button while the radio is already in the feature corresponding to the One Touch Button will cause the radio to abort the selected One Touch Feature. For more detailed information, refer to the RSS help screens for these fields.



## F8 - PHONE OPTIONS

*This function will be active only when the Phone Operation field has been set to a value other than None and the radio is Phone capable. Brings up a screen where you can access the Conventional interconnect access codes and digit timing parameters for this personality.*

## F9 - MORE OPTIONS

Brings up a screen where you can access additional parameters that can be used to customize a radio to specific system requirements.

## Field Definitions

### Personality

Use the UP/DOWN arrow keys to select the desired Conventional Personality. You may also enter the number directly.

**Note:** Refer to the Motorola Radio Catalog Sheets for the maximum number of personalities allowed for this model.

### Receive Only

Use the UP/DOWN arrow keys to enable/disable Receive-only operation on this personality. If this feature is enabled, all transmissions including signalling will be inhibited.

### Direct/Talkaround

*This field will not be visible if the Receive Only field is set to Enabled.* Use the UP/DOWN arrow keys to enable Talkaround operation on the current personality. In Talkaround (or Direct) mode, the radio will transmit on the receive frequency. This is useful when a Repeater is not in operation or is out of range.

Talkaround may be used in a manual or automatic mode. For *portables*, talkaround can be set manually through a button (**F4/F3/F3/F2**), a switch (**F4/F3/F3/F3**) or a menu defined on the RADIO WIDE BUTTON CONFIGURATION screen (**F4/F3/F3/F4**). The switch may be either on the top or side of the radio or on the keypad menu (if applicable). Talkaround for Mobiles can be set manually only through the buttons (**F4/F3/F3/F2**).

**Note:** If talkaround operation is enabled and no button/switch is assigned, the radio will default to talkaround operation on this personality.

### Time-Out Timer (sec)

*This field will not be visible if the Receive Only field is set to Enabled.* Use the UP/DOWN arrow keys to select the Time-Out Timer (TOT) for this personality. Time-Out Timer determines the amount of time the radio can continuously transmit before it must be de-keyed. When the Time-Out Timer is about to expire, the radio beeps and then stops transmitting.

Each personality may have one of four different TOT values. The range is 15 to 465 in 15 second increments and the value Infinite (that is, Time-Out Timer disabled). The four values for the radio can be changed on the RADIO WIDE OPTIONS screen (**F4/F3/F2/F9**).

### Scan List

Use the UP/DOWN arrow keys to select the Scan List to be used for this personality. To change or view the scan list, access the SCAN LIST screen (**F4/F3/F5**). Conventional personalities may use Conventional or Talkgroup type scan lists.

Hot Keypad

*This field will not be visible if the Receive Only field is set to Enabled. Use the UP/DOWN arrow keys to enable/disable Hot Keypad (DTMF while transmitting) operation for this personality. When this feature is enabled, the keypad is live during all dispatch operation. Pressing any digit 0 (zero) through 9, “\*”, or “#” will cause that digit to be transmitted.*

Phone Operation

*This field will not be visible if the Receive Only field is set to Enabled. Use the UP/DOWN arrow keys to select the type of phone service for this personality:*

List Only	The user may only call pre-programmed numbers from the phone list stored in the radio.
Unlimited	The user may call phone numbers from the list, or directly enter any number via the keypad.
None	Disables phone operation for this personality.

*The Phone Options function key will be active only when this field has been set to a value other than None.*

Signalling

Use the UP/DOWN arrow keys to enable MDC or other signalling types provided for this personality. MDC is a MOTOROLA proprietary, 1200-baud digital signalling protocol used for unit identification, selective signalling and emergency features.

*The MDC Options function key will be active only when this field has been set to MDC.*

**Note:** In order to choose MDC options in the RAC OPTIONS screen (F4/F6/F3/F9/F7), this field must be set to MDC. *If this field is not set to MDC, the only available RAC signalling type will be Singleton.*

MDC System #

*This field will be visible only if the Signalling field is set to MDC. Use the UP/DOWN arrow keys to select the MDC system to be used by this personality.*

**Note:** To add and/or configure MDC systems, access the MDC Systems screen (F4/F6/F4/F3).

PTT-ID

Use the UP/DOWN arrow keys to enable the MDC Unit Identification feature for this personality. When this feature is enabled, the Unit ID will be broadcast each time the transmitter is keyed (if the Leading PTT-ID is enabled) and/or de-keyed (if the Trailing PTT-ID is enabled).

**Note:** Access the MDC SYSTEMS screen (F4/F6/F4/F3) to specify when the ID must be transmitted.

Emerg. PTT ID

*This field is only visible if the MDC Emergency Type was set to Alarm and Call. Use the UP/DOWN to enable the MDC Emergency PTT ID feature for this personality. When the Emergency PTT ID is enabled, the radio Unit ID will be broadcast each time the PTT button is pressed while the radio is in emergency mode.*

The factory default is Disabled.

Revert

Use the UP/DOWN arrow keys to select the Emergency transmit channel. The choices are Selected Channel, or Channel 1, 2, or 3.

Selected Channel will cause the emergency transmission to always be broadcast on the current personality. However, the emergency transmission can also be reverted to another personality. Each MDC System also contains a table of three emergency revert channels which are configured on the MDC SYSTEM screen (F4/F6/F4/F3). Channels 1, 2, and 3 refer to that table.

**Note:** Receive-only personalities must always revert.

Rx Voice/Signal Type

Use UP/DOWN arrow keys to select one of the following:

ASTRO	Only ASTRO signals will be received.
Non-ASTRO	Analog signals will be received.
Mixed	Both ASTRO and Analog signals will be received.

**Note:** The selection of ASTRO Mode automatically overrides any previous Personality-type selection made in the Signalling field.

**Note:** Setting this field to ASTRO and then setting it back to Non-ASTRO or Mixed Mode will cause the Receive, Transmit, and Direct Squelch Types to be set to PL regardless of their current values.

Tx Voice/Signal Type

Use UP/DOWN arrows keys to select one of the following:

ASTRO	Only ASTRO signals will be transmitted.
Non-ASTRO	Analog signals will be transmitted.

To prevent Rx-Tx mismatch, this field will not allow you to enter a different signal type than the type entered in the Rx Voice/Signal Type. For example, if you selected ASTRO in the Rx Voice/Signal Type field, you must select ASTRO in this field as well.

**Note:** Depending on the RSS version in use and/or the capability of your radio, Phone Operation may be unavailable in ASTRO mode.

Frequency (MHz)

*The Transmit and Direct Frequency fields will not be visible if the Receive Only field is set to Enabled. The Direct Frequency field will not be visible if the Direct/Talkaround field is set to Disabled.*

Enter the Receive, Transmit or Direct (Talkaround) frequency directly in MHz. Alternatively, the UP/DOWN arrow keys may be used to scroll through the valid channels. *Blank receive frequency fields are not allowed.*

**Note:** Refer to the MOTOROLA Catalog Sheets/Price Pages for valid receive frequencies for this model.

Squelch Type

Use the UP/DOWN arrow keys to select Receive, Transmit and/or Direct (Talkaround) squelch type from among the following:

CSQ	Carrier Squelch (Receive Only)
PL	Tone Private-Line
DPL	Digital Private-Line
Disabled	(Transmit and Direct Only)

*A data field for a Receive code will be displayed if PL or DPL is selected.*

PL Code

Enter the PL (Private-Line) code directly in Hz (192.8 for instance) or use the alphanumeric code (7A for instance). Alternatively, the UP/DOWN arrow keys may be used to scroll through standard frequencies and codes. Press **F1** HELP while in this field to view a list of standard frequencies and their respective codes.

**Note:** A low-level hum or buzz in the received audio MAY be experienced when TPL code OZ (254.1 Hz) is used. This PL code is at the high end of the sub-audible frequency range and may be heard in the audio under certain circumstances. *Use of this code should be avoided if possible.*

DPL Code

Enter the DPL (Digital Private-Line) code directly (023 for instance). *Leading zeros are required.* Alternatively, the UP/DOWN arrow keys may be used to scroll through the standard codes. Press **F1** HELP while in this field to view a list of standard frequencies and their respective codes.

DPL Invert

*This field will be active (or can be accessed) only if the Squelch Type field is set to DPL.* Use the UP/DOWN arrow keys to invert the received DPL code for this personality.

# Conventional Secure Personality

## D F C F

From the MAIN MENU, press **F4**, **F6**, **F3** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Choice.							
MAIN: CHANGE / VIEW : CONV : PERS : SECURE									
Personality.....1 CONVENTIONAL SECURE PERSONALITY ----- Secure Voice/Signal Type....Securenet  Secure/Clear Strapping.....Secure      OTAR Tx.....Enabled Key Strapping.....Select                  Proper Code Detect.....Enabled Key Selection.....1                          Key ID.....None Echo Mute Time (ms).....0                  XL Delay Following Key ID.....0 XL Transmit.....Disabled Scan Select.....Non-XL Scan Holdoff Strapping.....Both									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV	NEXT						EXIT
		PERS	PERS						

**Note:** For radios equipped with CAI, the fields:

Secure/Clear Strapping will read **Voice Secure/Clear Strapping**

Key Strapping will read **Voice Key Strapping**

Key Selection will read **Voice Key Selection**

*This screen can be accessed only when a radio equipped with Secure hardware has been read and the field Secure Hardware Equipped is set to Yes. This screen permits access to Secure parameters linked to the current personality. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

### Function Key Descriptions

- F3 - PREV PERS**                      Accesses the previous personality.
- F4 - NEXT PERS**                    Accesses the next personality.

### Field Definitions

**Personality**                              Use the UP/DOWN arrow keys to select the desired Conventional personality. The number may also be entered directly.

**Note:** Refer to the Radio Catalog Sheet for the maximum number of personalities allowed for this model.

**Secure Voice/Signal Type**            *This is a view-only field.* It will display SECURENET or ASTRO based on whether you specified ASTRO or Non-ASTRO in the Rx Voice/Signal Type field on the CONVENTIONAL PERSONALITY screen (**F4/F6/F3**).

Secure/Clear Strapping

Use the UP/DOWN arrow keys to select the Secure/Clear Strapping for this personality. The valid choices are:

Clear	The current personality's transmit mode will be clear.
Secure	The current personality's transmit mode will be secure.
Select	The user is allowed to select the Secure or Clear transmit modes via the Secure/Clear button (for mobiles) or Secure/Clear switch (for portables).

The factory default is Select.

Voice Secure/Clear Strapping

Use the UP/DOWN arrow keys to select the Secure/Clear Strapping for this personality

Clear	The current personality's transmit mode will be clear.
Secure	The current personality's transmit mode will be secure.
Select	The user is allowed to select the Secure or Clear transmit modes via the Secure/Clear button (for mobiles) or Secure/Clear switch (for portables).

The factory default is Select.

Key Strapping

Use the UP/DOWN arrow keys to select the Key Strapping for this personality.

Select	An encryption key may be selected from the Key Selection menu for this personality.
Strapped	The Key Number selected from the Key Selection field will be strapped to this personality.

Voice Key Strapping

Use the UP/DOWN arrow keys to select the Voice Key Strapping for this personality.

Select	An encryption key may be selected from the Key Selection menu for this personality.
Strapped	The Key Number selected from the Key Selection field will be strapped to this personality.

The factory default is Select

Key Selection

Use the UP/DOWN arrow keys to select the encryption key for this personality. The range is from 1 to the largest valid key. The factory default is 1.

Voice Key Selection

Use the UP/DOWN arrow keys to select the encryption key for this personality. The range is from 1 to the largest valid key. The factory default is 1.

Echo Mute Time (ms)

This field is visible if the Receive Frequency is not equal to the Transmit Frequency. Use the UP/DOWN arrow keys to select the echo mute time for this personality. Values between 0 and 1500 ms may be selected in 50 ms increments.

This field defines the time period that the user's radio will remain muted when dekeying following a secure transmission. In radio systems having a large amount of data throughput delay, the tail end of the user's transmitted message could be heard following dekey if this field is not set correctly to account for systems delays.

XL Transmit

Use the UP/DOWN arrow keys to enable XL transmit mode for this personality. This field configures the transmit mode of the XL chip. If this feature is enabled, XL encrypted data will be transmitted in Secure transmit mode. If this feature is disabled, Non-XL (Cipher Feedback) encrypted data will be transmitted in Secure transmit mode. The receive mode of the XL chip need not be configured since it will automatically decrypt both XL and Non-XL data streams.

Scan Select

Use the UP/DOWN arrow keys to specify whether the Secure scan unselect duration for this personality is based on the XL or Non-XL Scan Unselect Duration field in the RADIO WIDE SECURE OPTIONS screen (F4/F3/F2/F6).

*This field is visible if the field XL Transmit is Disabled.* When scanning for coded transmissions, the radio will wait for a Secure detect following a carrier detect for a different duration depending on the setting in this field:

Non-XL	The radio will wait for the time period specified by the Non-XL (Cipher Feedback) Scan Unselect Duration field on the RADIO WIDE SECURE OPTIONS screen.
Non-XL&XL	The radio will wait for the time period specified by the XL Scan Unselect Duration on the RADIO WIDE SECURE OPTIONS screen.

Scan Holdoff Strapping

*This field is only visible if Rx voice/Signal Type on the Conventional Personality screen (F4/F6/F3) is set to Non-ASTRO.* Use the UP/DOWN arrow keys to select the desired choice. This feature is used to optimize the scan search algorithm and is normally based off on the receive signal type desired during scan operation. The value selected will determine the duration that the radio will wait on a channel for valid signal activity during scan. Valid choices are:

Clear Only or Secure Only	The radio will wait the preset time period specified for the signal type specified in the RADIO WIDE CONFIGURATION screen.
Both	The radio will use the longest preset time period to ensure that enough time is allocated to detect both signal types.

Proper Code Detect

Use the UP/DOWN arrow keys to enable proper code detect operation for this personality. When this field is set to Enabled, the speaker will unmute on secure data only if it is encrypted with the correct key.

Key ID

Use the UP/DOWN arrow keys to select the Key ID for this personality. The valid choices are:

Tx Only	The Key ID will transmit at the start of each transmission.
Rx Only	The Key ID will be modified to that specified at the start of each receive message.
Tx & Rx	Receive/Transmit is a combination of the above two options.
None	(Implies no selection.)

If the received message does not specify a Key ID, the radio will use its current Key ID.

XL Delay Following Key ID

Use the UP/DOWN arrow keys to select the XL delay time following Key ID for this personality. Values between 0 and 200 ms may be selected in 50-ms increments. The value selected for this field determines the length of time to wait, following a Key ID opcode transmission before the radio is allowed to transmit XL encrypted audio.

OTAR Tx

Use the UP/DOWN arrow keys to enable the OTAR Tx feature. If this feature is enabled, the radio will be allowed to send OTAR information on a channel. If this feature is disabled, the radio will not transmit Rekey Request Acks, Delayed Acks, or Power-Up Acks.

# Personality MDC Options D F C G

From the MAIN MENU, press **F4**, **F6**, **F3** and then **F7** to access this screen. *This screen is visible only if the Signalling Type field in the Conventional Personality Screen (F4/F6/F3) is set to MDC.*

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW:CONV:PERS:MDC	Use UP/DOWN Arrows to Select Choice.								
Personality.....1 <p style="text-align: center;">PERSONALITY MDC OPTIONS -----</p> Call Alert Decode.....Enabled    Tx Inhibit On Busy..... Enabled Call Alert Encode.....Enabled Selective Call Decode.....Enabled Unmute Type.....And Selective Call Encode.....Enabled Auto Sel Call Transmit....Disabled MDC Unlimited Calling.....Enabled									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen permits access to additional MDC features and options to further customize the radio configuration to specific user needs.

 Caution	Caution should be observed when changing parameters on this screen. MDC System parameter changes can substantially degrade system performance if they are made on one or a few radios, but not on all radios in the system.
---	---

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Personality

*This is a view only field.*

Call Alert Decode

Use the UP/DOWN arrow keys to enable/disable Call Alert Decode. If this feature is enabled, the user will be able to receive pages from the base station as well as from other radios.

Call Alert Encode Use the UP/DOWN arrow keys to enable/disable Call Alert Encode. If this feature is enabled, the user will be able to send pages to other radios.

**Note:** *If this feature is enabled and the selection of target radio(s) IDs via Call List is to be made available to the user, data must be programmed into the appropriate Call List table.*

Selective Call Decode Use the UP/DOWN arrow keys to enable/disable the MDC Selective Call Decode feature for this personality. If this feature is enabled, the user can receive individual as well as group calls. It is intended to eliminate annoyance to users when they receive traffic that does not pertain to them.

Unmute Type *This field will be visible only if the Select Call Decode field on this screen is set to Enabled.* Use the UP/DOWN arrow keys to select the muting type from among the following:

And	Radio must receive both the Selective Call code (or Quik-Call II tones) and the proper code (PL/DPL and/or Secure) before it will unmute.
Or	Radio will unmute on proper code (PL/DPL and/or Secure) or on carrier after the Selective Call code (or Quik-Call II tone) is decoded.

Selective Call Encode Use the UP/DOWN arrow keys to enable the MDC Selective Call Encode feature for this personality. If this feature is enabled, the user can send calls to an individual radio or to a group of radios. It is intended to eliminate annoyance to users when they receive traffic that does not pertain to them.

Auto Sel Call Transmit *This field will be visible only if the Selective Call Encode field is set to Enabled.* Use the UP/DOWN arrow keys to enable/disable the Auto Selective Call Transmit option. If this option is enabled, the radio will remain in Selective Call mode after the PTT switch is released. If not, it will exit Selective Call mode as soon as the PTT switch is released.

MDC Unlimited Calling *This field will be visible only if the Call Alert Encode field or the Selective Call Encode field is set to Enabled.* Use the UP/DOWN arrow keys to enable/disable Unlimited Calling. If this option is enabled, the user will be able to directly enter from the keypad IDs of radios he or she wants to call. *Target Radio ID selection via the programmed Call List instead is still a valid option available for models so equipped.*

**Note:** *To be able to take advantage of this feature, a radio must be equipped with a numeric keypad. This option affects only the Call Alert Encode and Selective Call Encode features.*

Tx Inhibit On Busy Use the UP/DOWN arrow keys to enable/disable the MDC Transmit Inhibit on Busy Channel option for this personality. When this option is enabled, polite MDC transmissions will be inhibited when a carrier is present on the channel.

# Conventional Personality Phone Options

## D F C H

From the MAIN MENU, press **F4**, **F6**, **F3** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Enter or Scroll to Select Personality.								
MAIN:CHANGE/VIEW:CONV:PERS:PHONE									
Personality... 1 CONVENTIONAL PERSONALITY PHONE OPTIONS ----- Auto Access Code Select.....1 -*1P# DTMF Access Timing Table.....1 Initial Delay (ms).....1000 Digit Duration (ms).....125 Interdigit Delay (ms).....75									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows the user to edit the Conventional phone configuration for each Conventional personality. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

Personality

*This is a view-only field.*

**Note:** Refer to the Motorola Radio Catalog Sheets for the maximum number of personalities allowed for this model.

Auto Access Code Select

Use the UP/DOWN arrow keys to select an Auto Access Code for this personality. The radio contains a table for DTMF Access and Deaccess code pairs and the personality points to one of the table entries. The actual four-digit codes are entered on the ACCESS/DEACCESS CODES screen (**F4/F3/F4/F8**).

DTMF Access Timing Table

Use the UP/DOWN arrow keys to select the set of DTMF timing parameters for this personality. Timing can be changed for Initial Delay, Digit Duration and Interdigit Delay. The radio contains a table with four sets of values for each of these parameters. The actual parameters are entered on the PHONE CONFIGURATION screen (**F4/F3/F4/F9**).

Initial Delay (ms)

*This a view-only field.* The value shown here depends on the DTMF Access Timing Table chosen.

Digit Duration (ms)

*This a view-only field.* The value shown here depends on the DTMF Access Timing Table chosen.

Interdigit Delay (ms)

*This a view-only field.* The value shown here depends on the DTMF Access Timing Table chosen.

## More Conventional Personality Options

# DFCI

From the MAIN MENU, press **F4**, **F6**, **F3** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Choice.				
MAIN:CHANGE/VIEW:CONV:PERS:OPTIONS									
Personality.....1 CONVENTIONAL PERSONALITY OPTIONS -----									
Smart PTT.....Inhibit On Carrier					Auto Scan.....Enabled				
Quick Key Override.....Enabled					Rx Emphasis.....Enabled				
Override Timer (ms).....500					Tx Emphasis.....Enabled				
Tx Power Level.....High					Tx Deviation.....5.0 kHz				
Busy LED.....Enabled					Tx Deviation T/A.....5.0 kHz				
Unmute/Mute Type...UnMute,Or Mute					Channel Spacing.....25.0 kHz				
Rx Unmute Delay (ms).....2- 100					One Touch Button 1 Index.....1				
Reverse Burst TOC..... Enabled					One Touch Button 2 Index.....1				
Squelch (Fine Tune).....0					One Touch Button 3 Index.....1				
Second LO Side Injection..Disabled					One Touch Button 4 Index.....1				
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP		PREV	NEXT		ASTRO	RAC			EXIT
		PERS	PERS		OPTIONS	OPTIONS			

The CONVENTIONAL PERSONALITY OPTIONS MENU permits access to additional features and options to further customize the radio configuration to your specific communication needs.

 Caution	Be careful when changing parameters on this screen. System parameter changes can substantially degrade radio performance if they are not made system-wide.
--	--

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F3 - PREV PERS**

Accesses the previous personality.

**F4 - NEXT PERS**

Accesses the next personality.

**F6 - ASTRO OPTIONS**

Brings up a screen where you can edit ASTRO data associated with THE CURRENT Conventional personality.

**F7 - RAC OPTIONS**

*This function will be visible for RAC-capable radios only.* Brings up a screen which contains Repeater Access (RAC)-related information relating to the current Conventional personality.

## Field Definitions

Personality Use the UP/DOWN arrow keys to select the desired Conventional Personality. The number may also be entered directly.

**Note:** Refer to the Motorola Radio Catalog Sheets for the maximum number of personalities allowed for this model.

Smart PTT Use the UP/DOWN arrow keys to enable/disable the Smart PTT function. The radio can inhibit transmission either on detection of a carrier or on detection of a non-matching PL code. This feature prevents users from listening in on (or transmitting over) conversations that they are not part of.

Quick Key Override *This field will be visible only when the Smart PTT field is set to a value other than Disabled.* Use the UP/DOWN arrow keys to enable the Smart PTT (Push-to-Talk) Override feature. If this override feature is enabled, the user can transmit on a busy channel by a quick key (double press) of the PTT switch.

Override Timer (ms) *This is a view-only field that is always set to 500ms.*

Tx Power Level *This field is visible on VHF and UHF radios only.* Use the UP/DOWN arrow keys to select High or Low transmit power for this personality. *The transmit power may be reduced 2 watts.*

Busy LED Use the UP/DOWN arrow keys to enable/disable the flashing red LED on the radio which indicates the presence of a carrier (busy channel).

Unmute/Mute Type Use the UP/DOWN arrow keys to select the receiver muting and unmuting characteristics for this personality from the choices below:

Standard	The radio unmutes audio when there is a valid PL (or DPL) signal, and mutes when the PL (DPL) signal is no longer present. Use this option for Carrier Squelch operation.
Unmute, Std Mute	The radio unmutes only when there is a valid PL (or DPL) signal AND there is a carrier strong enough to break squelch. The radio mutes when the PL (or DPL) signal is no longer present.
Unmute, OR Mute	The radio unmutes only when there is a valid PL (or DPL) signal AND there is a carrier strong enough to break squelch. The radio mutes when the PL (or DPL) signal is no longer present OR the squelch closes (weak carrier).

Rx Unmute Delay (ms) Use the UP/DOWN arrow keys to select a Receive Unmute Delay for this personality. This is the amount of time the radio waits to unmute after squelch has been detected. Eight choices between 0 (zero) and 2150 ms are available.

Reverse Burst TOC

Use the UP/DOWN arrow keys to enable/disable the Reverse Burst (PL), or turn-off code (DPL), to be transmitted after the radio is de-keyed. The Reverse Burst or turn-off code is used to signal the receiving radio that the transmission is ending and to indicate that audio must be muted. By muting before the carrier drops, the noise burst (squelch tail) on the receiving end is substantially reduced.

Squelch (Fine Tune)

Use the UP/DOWN arrow keys to adjust the Squelch Fine Tuning. This value is combined with the master squelch setting to determine the overall squelch for this personality. This feature can be used to tighten the squelch on frequencies that are experiencing interference while maintaining maximum sensitivity on all other frequencies. The valid range of values is 0 (zero) to 31 in increments of 1.

Second LO Side Injection

Use the UP/DOWN arrow keys to enable/disable Second LO (Local Oscillator) Side Injection operation on this personality.

**Note:** *Side Injection controls a very important aspect of the frequencies associated with this personality, and SHOULD NOT be enabled unless verified as necessary.*

When this feature is enabled, it will override otherwise regular radio signal algorithms for this personality and result in the reduction of interference from very near units operating on different but fairly close (within 900 kHz separation) channels.

Auto Scan

Use the UP/DOWN arrow keys to enable the Auto Scan option for this personality. When this feature is enabled, the radio will automatically scan when on this personality. *To use a scan on/off switch or button, this option must be set to Disabled.*

Rx Emphasis

Use the UP/DOWN arrow keys to enable/disable receive de-emphasis on this personality.

Pre-emphasis	Amplifies the higher frequencies so that, when they are transmitted, the signal-to-noise ratio is better.
De-emphasis	Reverses the pre-emphasis after the signal has been received.

Tx Emphasis

Use the UP/DOWN arrow keys to enable/disable Transmit Pre-emphasis on this personality.

Pre-emphasis	Amplifies the higher frequencies so that, when they are transmitted, the signal-to-noise ratio is better.
De-emphasis	Reverses the pre-emphasis after the signal has been received.

Tx Deviation

Use the UP/DOWN arrow keys to select the Transmitter Deviation for this personality. This is the maximum amount that modulation can cause the carrier to deviate from its unmodulated frequency. The choices are:

2.5 kHz	VHF, UHF, and 800 MHz Band Analog and ASTRO (12.5 kHz Channel Spacing - Not ASTRO WIDE Pulse)
4.0 kHz	821 MHz Band (20 kHz Channel Spacing)
5.0 kHz	VHF, UHF, and 800 MHz Bands (30/25 kHz Channel Spacing)

**Note:** *If 2.5 kHz is selected and the Rx Voice/Signal Type on the CONVENTIONAL PERSONALITY screen (F4/F6/F3) is set to Non-ASTRO for the current personality, the Secure/Clear Strapping field (Voice Secure/Clear Strapping for radios capable of CAI Digital Operation) on the CONVENTIONAL SECURE PERSONALITY screen (F4/F6/F3/F6) will be set to clear and will not be displayed for the current personality. In this case, the radio will not send SECURE transmissions on this personality.*

Tx Deviation T/A

*This is a read-only field.* It specifies the Tx deviation for Talkaround (Direct). This deviation will be the same as the normal Tx deviation.

Channel Spacing

*This is a view-only field.*

One Touch Buttons 1-4 Index

Use the UP/DOWN arrow keys to select the One Touch Index for the current Conventional personality. The One Touch Index will indicate which list member associated with the feature assigned to the corresponding One Touch Button is transmitted when the One Touch Button is pressed.



## Function Key Descriptions

**F6 - TALKGROUP** Function key **F6** (TALKGROUP) can be used to reach the ASTRO Conv Talkgroup Options screen. *This screen is only available if the radio is equipped with CAI Digital operation.*

**F7 - OTACS/OTACR** *This screen can be accessed only if the OTACR/OTACS software option has been purchased for the radio.* Brings up a screen which displays options settings for the Over-The-Air-Channel-Reassignment (OTACR) and Over-The-Air-Channel-Steering (OTACS).

## Field Definitions

Personality *This is a view only field.*

ASTRO System Use the UP/DOWN arrow keys to scroll through the available ASTRO systems. ASTRO systems can be configured in the ASTRO SYSTEM screen (**F4/F6/F5/F3**).

RS232 Packet Data *This field is visible only if the Data Peripheral Option has been purchased for the radio.* Use the UP/DOWN arrow keys to enable/disable the RS232 Packet Data operation on this personality. When the RS232 Packet data is enabled, any Data Peripheral unit will be capable of transmitting/receiving data on this channel.

Digital Modulator Type This field represents the Digital Modulator Type for this personality. The valid modulation choices are:

C4FM	non-simulcast operation
CQPSK	narrowband simulcast operation
WIDE	wideband simulcast operation

**Note:** WIDE cannot be chosen if the Tx Deviation selected on the previous screen (Conventional Personality Options) is 2.5 kHz.

The factory default is C4FM.

Call Alert Decode Use the UP/DOWN arrow keys to enable/disable this option. When this field is set to Enabled, the user can receive pages from the base station as well as from other radios.

Call Alert Encode Use the UP/DOWN arrow keys to enable/disable this option. When this field is set to Enabled, the user can send pages to other radios.

Selective Call Decode Use the UP/DOWN arrow keys to enable/disable this option. When this field is set to Enabled, the user can receive individual and group calls. This option is intended to eliminate the annoyance users experience when they receive traffic that does not pertain to them.

**Note:** *If this feature is set to Enabled, and selection of target radio(s) IDs via Call list is to be made available to the user, data must be programmed into the appropriate Call List Table. If this field is set to*

*Disabled, the Auto Sel Call Transmit field on this screen will NOT be visible.*

Selective Call Encode

Use the UP/DOWN arrow keys to enable/disable this option. When this field is set to Enabled, the user can send calls to an individual or a group of radios. This option is intended to eliminate the annoyance users experience when they receive traffic that does not pertain to them.

**Note:** *If this feature is set to Enabled, and selection of target radio(s) IDs via Call list is to be made available to the user, data must be programmed into the appropriate Call List Table.*

Auto Sel Call Transmit

Use the UP/DOWN arrow keys to enable/disable the Auto Selective Call Transmit option. If the Auto Sel Call Transmit option is enabled, the radio will remain on Selective Call mode after the PTT switch is released.

ASTRO Unlimited Calling

*To be able to take advantage of this feature, a radio must be equipped with a numeric keypad.* Use the UP/DOWN arrow keys to enable/disable Unlimited Calling. With this option enabled, the user is able to directly enter from the keypad the ID of radios to be called. Target Radio ID selection via the programmed Call List instead is still available for models so equipped.

**Note:** *This option affects only the Call Alert Encode and Selective Call Encode features. This field is visible if either Call Alert Encode or Selective Call Encode is Enabled.*

Adaptive Power

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will use a lower power level if the station reports that it received a strong signal from the subscriber. The radio will always transmit with full power initially. Once the radio dekeys, it will look for a data message from the station. If the station reports that the last reception was strong, the radio will switch to the 1/2 power setting.

**Note:** *Adaptive power is only available on ASTRO Tx channels.*

Rd Lap

*This field is not visible for radios equipped with CAI Digital Operation.* Use the UP/DOWN arrow keys to enable/disable this feature. If this field is set to Enabled, the radio will be able to transmit ASTRO data packets (such as Status, Message, Emergency, etc.). If this field is set to Disabled, the operation of these features is inhibited in the radio.

## Rx Unmute Rule

Use the UP/DOWN arrow keys to select Rx Unmute Rule. The choices are:

Normal Squelch	The radio will unmute upon decoding a Network ID match.
Selective Squelch	The radio will unmute upon decoding a Network ID match and either a Talkgroup ID match or a Selective Call. [1] [2].
Data and Squelch	The radio will unmute upon decoding a Network ID match and Selective Call. [3].
Digital CSQ	The radio will unmute to all CAI compliant digital voice signals. [4] [5].

[1] For radios equipped with VSELP (Vector Sum Exited Linear Prediction) operation, the Talkgroup ID match is the Talkgroup ID associated with the selected ASTRO system. For the radio to unmute on a Selective Call, Selective Call Decode must be enabled.

[2] For radios equipped with CAI (Common Air Interface) operation, for this option to be available, Talkgroup must be enabled or Selective Call Decode must be enabled. If Talkgroup is enabled, the Talkgroup ID is the selected value on the ASTRO CONV TALKGROUPOPTIONS Screen (**F4/F6/F3/F9/F6/F6**). See the further Note below. For the radio to unmute on a Selective Call, Selective Call Decoder must be enabled.

[3] For this option to be available, Selective Call Decode must be enabled.

[4] For this option to be available, the radio must be equipped with CAI Digital Operation.

[5] When this option is selected, the Rx Network ID, Tx Network ID, and Direct Network ID fields will be set to 293 and will remain fixed at that value.

**Note:** For radios equipped with CAI Digital Operation, when transmitting on the System Wide Talkgroup (ID 65535), the radio will automatically receive on Normal Squelch regardless of the setting of this field.

## Emergency Revert

*This field is visible if the Tx Signal Type in the Conventional Personality screen **F4/F6/F3** is set to ASTRO.* Use the UP/DOWN arrow keys to select the Emergency transmit channel. The choices are Selected Channel or Channel #1, #2, or #3. Selected Channel will cause the emergency transmission to always be broadcast on the current personality.

However, the emergency transmission can also be reverted to another personality. Each ASTRO System also contains a table of three emergency revert channels, which are configured on the ASTRO SYSTEM screen (**F4/F6/F5/F3**). Channels #1, #2, and #3 refer to that table.

**Note:** Receive-only personalities must always revert.

#### Rx Network ID

Use the UP/DOWN arrow keys to scroll through the available Rx Network ID values, or enter the value directly. *It may take a few seconds for the screen to update to the new value.* The Rx Network ID feature allows the separation of addressing modes among co-channel and adjacent channel users. This feature is similar to the Private-Line (PL) and Digital Private-Line (DPL) features which exist in analog radios. By choosing an Rx Network ID, the radio can selectively address (choose) one of several Repeaters within overlapping coverage areas allowing the user to listen to a specific Repeater. The valid range of values is 0-FFF in increments of 1.

**Note:** *If the Direct Frequency Enable field is set to Disabled, the Direct Network ID will be slaved to the Rx Network ID.*

**Note:** *When Rx Unmute Rule is set to Digital CSQ, this field will be set to 293.*

#### Tx Network ID

Use the UP/DOWN arrow keys to scroll through the available Tx Network ID values, or enter the value directly. *It may take a few seconds for the screen to update to the new value.* The Tx Network ID feature allows the separation of addressing modes among co-channel and adjacent channel users. This feature is similar to the Private-Line (PL) and Digital Private-Line (DPL) features in analog radios.

By choosing a Tx Network ID, the radio can be made to selectively address (choose) one of several Repeaters within overlapping coverage areas allowing the user to key-up a specific Repeater. The valid range of values is 0-FFF in increments of 1.

**Note:** *When Rx Unmute Rule is set to Digital CSQ, this field will be set to 293.*

#### Direct Network ID

Use the UP/DOWN arrow keys to scroll through the available Direct Network ID values, or enter the value directly. The Direct Network ID feature allows the separation of addressing modes among co-channel and adjacent channel users. This feature is similar to the Private-Line (PL) and Digital Private-Line (DPL) features which exist in analog radios.

By choosing a Direct Network ID, the radio can be made to selectively address (choose) one of several Repeaters within overlapping coverage areas allowing the user to key-up a specific Repeater. The Direct Network ID will be used whenever the radio is in direct (talkaround) mode. Otherwise the Tx Network ID will be used.

If the Direct Frequency Enable field is set to Disabled, the Direct Network ID will be slaved to the Rx Network ID. The valid range is 0-FFF in increments of 1.

**Note:** *When Rx Unmute Rule is set to Digital CSQ, this field will be set to 293.*

#### Late Entry Fast Unmute

*This field is displayed for radios equipped with CAI Digital Operation only.* When this field is enabled, a radio that begins receiving a call already

in progress is allowed to unmute before establishing whether the call is a secure call. Enabling this field also allows calls to unmute 180 to 360 ms earlier than without this field enabled.

It is recommended that this feature only be used on non-secure channels because radios receiving secure calls will unmute to unintelligible audio until the call is recognized as secure. The factory default is Disabled.

Talkgroup

*This field is displayed for radios equipped with CAI Digital Operation only.* This field enables/disables Talkgroup operation for the current personality. When enabled, function key F6 (TALK GROUP) can be used to reach the ASTRO Conv Talkgroup Options screen. The factory default is Disabled.

ASTRO  
Conventional  
Talkgroup Options  
**D F C I F**  
**F**

From the MAIN MENU, press **F4, F6, F3, F9, F6** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CONV:PERS:OPTIONS:OPTIONS:TALKGROUP																	
Personality.....1 <p style="text-align: center;">ASTRO CONV TALKGROUP OPTIONS -----</p> Selection Type.....Strapped Talkgroup List.....1  <table border="1"> <thead> <tr> <th>#</th> <th>Talkgroup ID</th> <th>Talkgroup Alias</th> <th>Voice/Secure Clear Strapping</th> <th>Key Select</th> </tr> <tr> <th>---</th> <th>-----</th> <th>-----</th> <th>-----</th> <th>-----</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>00002</td> <td>TG 00005</td> <td>Select</td> <td>1</td> </tr> </tbody> </table>			#	Talkgroup ID	Talkgroup Alias	Voice/Secure Clear Strapping	Key Select	---	-----	-----	-----	-----	1	00002	TG 00005	Select	1
#	Talkgroup ID	Talkgroup Alias	Voice/Secure Clear Strapping	Key Select													
---	-----	-----	-----	-----													
1	00002	TG 00005	Select	1													
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT								

**Note:** This screen is available only if Talkgroup in the ASTRO Conventional Personality Options screen (**F4/F6/F3/F9/F6**) is Enabled.

This screen allows you to change/view Talkgroup options for the current personality.

The settings selected on this screen are personality specific and apply only to the ASTRO Personality identified on the screen. For radio models equipped to handle multiple personalities, an option or set of options can therefore be made available under one personality and turned off under another.

### Field Definitions

#### Selection Type

This field is used to determine the method used for selecting Talkgroups for the current personality. Choose one of the following Talkgroup Selection Types:

Selectable	The user is able to choose a Talkgroup from the selected Talkgroup List after the radio is programmed.
Strapped	The Talkgroup selected in the number field is strapped to the current personality and can only be changed by re-programming the radio via the RSS.

The factory default is Strapped.

#### Talkgroup List

This field is used to choose a Talkgroup List for the current personality. A personality can only access Talkgroups in the list selected for it. The range is from 1 to the number of Talkgroup Lists currently defined. The factory default is 1.

# (index)

This field is used to select a Talkgroup from the Talkgroup List for the current personality. If the Talkgroup Selection Type field is set to Selectable, this Talkgroup will be used for the personality until another Talkgroup is selected by the user. If the Talkgroup Selection Type field is set to Strapped, this Talkgroup will be strapped to the personality.

The range is from 1 to the number of Talkgroups in the Talkgroup List for the current personality. the factory default is 1.

**Note:** *The rest of the fields on the screen are for display only. They cannot be edited. The Talkgroup ID, Talkgroup Alias, Secure/Clear Strapping, and Key select fields all reference the values defined on the ASTRO Conventional Talkgroups screen which are associated with the Talkgroup List and the index within the Talkgroup List that are currently selected.*

OTACR/OTACS (For  
ASTRO Portables  
Only)

**D F C I**  
**F G**

From the MAIN MENU, press **F4, F6, F3, F9, F6** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Choice.				
... CONV: PERS: OPTIONS: OPTIONS: OTACR									
OTACR/S -----									
OTACR Feature.....Enabled					OTACS Feature.....Enabled				
OTACR Command Limited Patience Time (ms).....6375									
CSS Pos	Zone	Channel	CSS Pos	Zone	Channel	CSS Pos	Zone	Channel	
-----	----	-----	-----	----	-----	-----	----	-----	
1	1	107	9	1	113				
2	1	104	10	1	110				
3	1	105	11	1	106				
4	1	20	12	1	109				
5	1	21	13	1	112				
6	1	22	14	1	111				
7	1	23	15	1	28				
8	1	108	16	1	19				
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen can be accessed only if the OTACR/OTACS software option has been purchased for the radio. This screen allows you to edit the Over-The-Air-Channel-Reassignment (OTACR) and Over-The-Air-Channel-Steering (OTACS) options available for the radio.*

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

### OTACR Feature

Use the UP/DOWN arrow keys to enable/disable this feature. This field determines if the Over-The-Air-Channel-Reassignment feature is enabled.

### OTACS Feature

Use the UP/DOWN arrow keys to enable/disable this feature. This field determines if the Over-The-Air Channel-Steering feature is enabled.

### OTACR Command Limited Patience Time (ms)

Use the UP/DOWN arrows or enter a value directly. This is the maximum amount of time the subscriber unit waits for confirmation that the transmission of an OTACR Command Application Acknowledge was successful. If confirmation is not received within the specified period of time, OTACR is aborted. The field can range from 0 (zero) to 6375 milliseconds in 25 ms increments.

### CSS Pos

*This is a view only field.*

### Zone

Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. This field determines the Zone associated with this position of the Channel Selector Switch (CSS). If the Zone is set to 0 (zero) and the channel is set to 255 then the CSS position is considered to be unprogrammed.

Channel

Use the UP/DOWN arrow keys to make your selection or enter the desired value directly. This determines the channel associated with this position of the Channel Selector Switch. If the Zone is set to 0 and the channel is set to 255 then the CSS position is considered to be unprogrammed.

# Conventional Personality RAC Options

## D F C I G

From the MAIN MENU, press **F4, F6, F3, F9** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Personality.								
...CHANGE/VIEW:CONV:PERS:OPTIONS:RAC									
Personality... 1 CONVENTIONAL PERSONALITY RAC OPTIONS ----- Repeater Access.....Enabled Tone Signalling System.....1 Access Strapping.....Mode Slaved Access Type.....Manual RAB 1 Code Type.....Singletone RAB 1 Singletone (Hz).....1-300.0 RAB 2 Code Type.....None									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen can be accessed from the CONVENTIONAL PERSONALITY OPTIONS screen (F4/F6/F3/F9) only if the current radio is RAC-capable and if either Rx Voice/Signal Type or Tx Voice/Signal Type is not set to ASTRO.*

This screen contains all the personality specific RAC-related information. *The information contained in this screen will change depending on the current personality.* Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Field Definitions

Personality

*This is a view only field that displays the current personality.*

**Note:** *This field cannot be edited.*

Repeater Access

This option enables Repeater Access on this personality. Repeater Access as the name indicates is used to access a Repeater. Typically, upon receiving the Repeater Access code word the Repeater will remain in repeat mode until the hangtime expires. Repeater Access can be one of the following:

Manual	The Repeater Access code word will be sent when the side button designated for Repeater Access is pressed.
Automatic	The Repeater Access code word will be sent preceding every user-initiated transmission.

Tone Signalling System

*This field will be visible only if the Repeater Access field is set to Enabled.* Use the UP/DOWN arrow keys to select the Single Tone signalling system to be used by this personality.

Access Strapping

Use the UP/DOWN arrow keys to set Access Strapping to Mode Slaved or Operator Selectable.

Access Type

*This field will be visible only if the Repeater Access field is set to Enabled. Use the UP/DOWN arrow keys to select the Repeater Access Type. Valid choices are:*

Auto	The RAC code word is transmitted prior to every transmission.
Manual	The code word is transmitted with each push of the RAB button.

RAB 1 Code Type

*This field will be visible only if the Repeater Access field is set to Enabled and the Access Type field is set to Manual. Use the UP/DOWN arrow keys to select the type of Repeater Access Button operation. Depending on your radio capabilities, choices will be Singletone, DTMF or MDC.*

RAB 1 Singletone (Hz)/RAB 1  
MDC Repeater ID

*This field will be visible only if the Repeater Access field is set to Enabled and the Access Type field is set to Manual. For Singletone and MDC, enter the index from the Singletone List or the MDC Repeater ID List. For DTMF, enter the tone value; DTMF Tone values are 0 (zero) through 9, "\*" and "#". Alternatively, the UP/DOWN arrow keys could be used to scroll through indexes/values.*

RAB 2 Code Type

*This field will be visible only if the Repeater Access field is set to Enabled and the Access Type field is set to Manual. Use the UP/DOWN arrow keys to select the type of Repeater Access Button operation. Depending on your radio capabilities, choices will be Singletone, DTMF, MDC or None.*

# MDC Configuration Menu

## D F D

From the MAIN MENU, press **F4**, **F6**, and then **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW:CONV:MDC	Select Function F1 - F10.								
MDC CONFIGURATION MENU -----									
F1 - HELP F2 - F3 - MDC Systems F4 - MDC Call List Data F5 - MDC Repeater ID List F6 - F7 - F8 - F9 - F10 - EXIT									
F1 HELP	F2	F3 SYSTEM DATA	F4 CALL LIST	F5 REPEATER ID LIST	F6	F7	F8	F9	F10 EXIT

This screen allows you to edit the MDC options for the radio.

### Function Key Descriptions

**F3 - SYSTEM DATA**

Brings up a screen where you can configure the radio to work with various MDC systems.

**F4 - CALL LIST**

Brings up a screen where you can edit Conventional MDC Call IDs.

**F5 - REPEATER ID LIST**

*This screen can be accessed only if the radio is RAC capable. It Brings up the MDC Repeater ID LIST screen.*

# MDC Systems D F D C

From the MAIN MENU, press **F4**, **F6**, **F4** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Choice.							
MAIN:CHANGE/VIEW:CONV:MDC:SYSTEMS									
MDC System.....1									
MDC SYSTEMS -----									
Primary ID.....0001	Emergency.....Enabled								
Secondary ID.....00000000	Emergency Type....Alarm and Call								
Variable ID.....000	Emer PTT ID Sidetone...Disabled								
Leading PTT-ID.....Enabled	Acknowledge Alert Tone...Enabled								
PTT-ID Sidetone.....Disabled									
Trailing PTT-ID.....Disabled									
Radio Check.....Disabled									
Radio Inhibit.....Disabled									
Status.....Enabled									
Status Request.....Disabled									
Message.....Disabled									
		Revert Table -----							
		Num	Zone Channel						
		---	-----						
		1	1 1						
		2	1 1						
		3	1 1						
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE				MORE	EXIT
	SYS	SYS	SYS	SYS				OPTIONS	

This screen allows you to change or view parameters that pertain to an MDC system. *The settings shown on the screen are only for the system shown.* Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

- |                   |   |
|-------------------|---|
| F2 - ADD SYS      | Adds a system.  |
| F3 - PREV SYS     | Accesses the previous system.   |
| F4 - NEXT SYS     | Accesses the next system.   |
| F5 - DELETE SYS   | Deletes the selected MDC system. You will be prompted for confirmation before the system is actually deleted. |
| F9 - MORE OPTIONS | Allows you to change or view additional MDC system field parameters.  |

## Field Definitions

MDC System	Use the UP/DOWN arrow keys to change the MDC system or directly enter the system number.
Primary ID	Enter the four-digit hexadecimal for primary unit ID or use the UP/DOWN arrow keys to select a primary identification code from 1 to DEEE. <i>The digit F is not allowed in the ID.</i> The primary identification code (PID) is in Binary Coded Decimal (BCD) format and indicates which unit on the network sent the message. All out-bound messages will be sent with this identification code.
Secondary ID	Enter a hexadecimal value or use the UP/DOWN arrow keys to select a secondary identification code from 0 (zero) to OEEE EEEE for the terminal. <i>The digit F is not allowed in the ID.</i> This is the secondary ID assigned to the radio unit by the host. The secondary ID is related to the position of the unit.
Variable ID	Enter the ID directly. The Variable Unit ID is a three-digit hexadecimal number ranging from 0 (zero) to EEE. <i>The digit F is not allowed in the ID.</i> The Variable Unit ID is used to group radios so that several radios will decode the same Selective Call or Call Alert.
Leading PTT-ID	Use the UP/DOWN arrow keys to enable/disable the unit identification data packet transmission at the beginning of each transmission (BOT). If this feature is enabled, the radio will automatically send the radio's unit identification code to the dispatcher each time the microphone PTT is pressed. If PTT-ID Sidetone is enabled, the user must wait until the tone stops before he or she begins talking.
PTT-ID Sidetone	<p><i>This field will be visible only if the Leading PTT-ID field on this screen is set to Enabled.</i> Use the UP/DOWN arrow keys to enable/disable PTT-ID Sidetones. During transmission of data packets, the microphone and all voice transmission is automatically disabled. PTT-ID Sidetones are used to indicate the end of transmission so that the user may begin to talk.</p> <p>If PTT-ID Sidetones are enabled, a continuous alert tone will sound as soon as the PTT is pressed and will continue until the data packet(s) has been sent. The user must wait until the tone stops before he or she begins talking.</p>
Trailing PTT-ID	Use the UP/DOWN arrow keys to enable/disable the MDC unit identification data packet transmission at the end of each transmission (EOT). If the trailing PTT-ID feature is enabled and the microphone PTT is released, the radio will automatically send the radio's unit identification code to the dispatcher. <i>The PTT-ID Sidetone will NOT sound for trailing PTT-IDs.</i>
Radio Check	Use the UP/DOWN arrow keys to enable/disable this feature. Enabling this option allows the dispatcher to check the state of the radio (that is, turned on or off), as long as the radio is within range of the system (Clear mode).

Radio Inhibit	<p>Use the UP/DOWN arrow keys to enable/disable this feature. The Radio Inhibit feature allows the radio to respond to a remote Inhibit signal which is essentially a shut-down command from the dispatcher. Upon receipt of this command, the radio transmits a quick acknowledgment to the dispatch equipment. It then goes into a dormant state during which the receiver audio is muted and the transmit audio path is blocked. In addition, all operator controls are rendered inoperative, channel scan is stopped on the operating Mode which received the command, and all LEDs are turned off.</p> <p>The radio will remain in this Inhibited state until it receives an Enable command. Alternatively, the radio may be uninhibited by reading and re-writing its codeplug with the RSS.</p>
Status	<p>Use the UP/DOWN arrows to enable/disable this feature. The Status feature, when enabled, allows the user to select and transmit a specific status from a list pre-programmed into the radio. A complete activation of the Status feature therefore includes first enabling the feature and then programming the desired status list to be made available to the user. Status list programming is performed from the STATUS ALIAS screen (<b>F4/F6/F9</b>). Enabling this field also allows for the setting of the Status Request RSS option</p> <p>If this field is set to Disabled, the user will not be able to select and transmit a status from the radio's list to set the Status Request RSS option.</p>
Status Request	<p><i>This field will be visible only if the Status field on this screen is set to Enabled.</i> Use the UP/DOWN arrow keys to enable/disable this feature. If Status Request is enabled, the radio responds to a remote status interrogation with the last attempted status. Disabling the feature prohibits the radio from responding to a remote status interrogation.</p>
Message	<p>Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the user can select and transmit a specific message from a list pre-programmed into the radio. To activate the message feature, you must first set this field to Enabled and then program the message list from the MESSAGE ALIAS screen (<b>F4/F6/F8</b>). If this field is set to Disabled, the radio user will not be able to select and transmit a message from the radio's list.</p>
Emergency	<p>Use the UP/DOWN arrow keys to enable/disable Emergency for the current system. The type of Emergency can then be specified in the Emergency Type field on this screen.</p>

## Emergency Type

*This field will be visible only if the Emergency field on this screen is set to Enabled. The following choices are available:*

Alarm Only	An emergency message is repeatedly sent to the base station until it is cancelled in one of the following ways: <ul style="list-style-type: none"><li><input type="checkbox"/> All the allowed retries (both polite and impolite) have been sent;</li><li><input type="checkbox"/> An acknowledgment is received from the base station;</li><li><input type="checkbox"/> A first PTT press is executed; or</li><li><input type="checkbox"/> A long press of the emergency button occurs.</li></ul>
Alarm & Call	An emergency message is repeatedly sent to the base station until: <ul style="list-style-type: none"><li><input type="checkbox"/> All the allowed retries (both polite and impolite) have been sent; or</li><li><input type="checkbox"/> The radio receives an acknowledgment from the base station.</li></ul> Once an acknowledgment is received, the user can talk to the base station. An emergency PTT ID will be sent with the voice on each PTT press. The emergency call can be cancelled by a long press of the Emergency button.

Both types of emergency support reverting (that is, transmitting emergency on a predetermined channel).

## Emer PTT ID Sidetone

*This field will be visible only if the Emergency Type field on this screen is set to Alarm and Call. Use the UP/DOWN arrow keys to choose whether or not the radio should emit a sidetone when the emergency ID is being sent.*

## Acknowledge Alert Tone

*This field will be visible only if the Emergency field on this screen is set to Enabled. Use the UP/DOWN arrow keys to enable/disable the emergency acknowledge beep which will sound when the radio receives acknowledgment of its emergency call.*

## Revert Table

*This table will be visible only if the Emergency field on this screen is set to Enabled. This field is part of the Emergency Channel Revert table. The table contains the channels pointed to in the Conventional personalities to which the radio reverts when it enters Emergency call mode. Enter the zone numbers and the channel numbers in the table. Each MDC personality will select one of these channels or itself*

First create the Conventional personalities. Then go to the ZONE/CHANNEL ASSIGNMENT screen and enter channel information. You will then be able to set the MDC emergency channels.

**Note:** Emergency revert channels cannot be receive-only channels.



Inter-Packet Time (ms) Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. The inter-sequence pretime is the period of time between consecutive MDC messages. Valid entries are in the range 0 (zero) to 6350 ms in 50-ms increments.

**Note:** Due to the rounding that occurs when Preamble During Pretime is enabled, the value shown may change by 50 ms when a codeplug is read from a radio or file. *However, this adjustment occurs only in the Radio Service Software and not in the radio.*

Limited Patience Time (sec) Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the amount of time that a polite MDC signal will be transmitted before an impolite signal is sent. The valid range of values is 1 to 255 seconds. A value of Infinite is also permitted.

DOS (Data Squelch) Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will not unmute while data is being received.

Operation *This field will be visible only if the DOS (Data Squelch) field is set to Enabled.* Use the UP/DOWN arrows to make your selection. If this field is set to Enabled, Data Operated Squelch (DOS) operating criteria will be adjusted to both 1800 Hz and 1200 Hz signals. If this feature is disabled, this adjustment applies only to 1800 Hz signals.

Coast Time (ms) *This field will be visible only if the DOS (Data Squelch) field is set to Enabled.* Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the time delay during which the audio will remain muted after an MDC message has been received in its entirety. Valid entries range from 0 (zero) to 1134.75 in 4.45-ms increments.

Sel Call Reset Use the UP/DOWN arrows to make your selection. This field's setting determines how the Select Call mode is reset after receiving a Select Call and the radio has un-muted. The radio will return from Carrier Squelch mode to Select Call packet required mode. Valid selections are:

Auto	Resets the radio after the Sel Call Auto Reset timer expires.
Auto w/ Car(rier) Override	Resets the radio and waits until the voice stops and the reset timer expires. However, the timer will resume any/each time a carrier (or voice) is detected.
Manual	Radio must be reset manually by pressing the Monitor button.

Auto Reset Time (sec) Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the time duration for which the radio will remain in Carrier Squelch mode after it has received a Select Call. Once the Auto Reset Time has expired, the radio will reset to the Select Call squelch mode. The valid range of values is 0 (zero) to 255 seconds.

Polite Retries Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the number of times the radio will attempt to transmit an MDC emergency message while no one else is transmitting. A polite attempt is one that is transmitted only when no

one else is transmitting. The valid range of values is 0 (zero) to 14 seconds. A value of Infinite is also available.

Impolite Retries

Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the number of times that the radio will attempt to transmit an emergency message even if someone else is transmitting. An impolite attempt is one that is transmitted regardless of whether or not someone else is transmitting. The valid range of values is 1 to 15 seconds.

Emer Prio(rity) Tx Inhibit

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, all other radios on the system will decode the Emergency Acknowledgment or the Emergency PTT code word. The radios will also inhibit their transmitters for the time required for the acknowledgment or until the receive carrier goes away.

The user's call request has priority over all other types of call traffic. The radio will transmit voice and an Emergency Code Word if:

- the user presses the PTT button; or
- the dispatcher's alarm acknowledge has a command to remotely key up.

Emergency Limited Patience Time (sec)

*This field will be visible only if the Emer Prio(rity) Tx Inhibit field is set to Enabled.* Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. When the radio is in Emergency Call Mode, the radio will wait for the time period specified here before impolitely transmitting voice (if voice transmission is inhibited by the Emergency Priority Inhibit feature). The valid range of values is 0 (zero) to 255 seconds.

Global Tx Multiplier

Use the UP/DOWN arrow keys to enable/disable this feature. Enabling this feature will cause the default Tx Multiplier field value to double. This doubles the time that the transmitter will key (without receiving an Ack during Emergency Call) after the radio exhausts all retries. If this feature is disabled, no doubling of the Tx Multiplier field value will occur.

Tx Multiplier

Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This value indicates the time that the transmitter will key (without receiving an Acknowledgment during Emergency Call) after the radio exhausts all retries. This value is multiplied by the radio's base time. The valid range of values is 0 (zero) to 3.

RAC Pretime (ms)

Use the UP/DOWN arrow keys to choose a value or enter the desired value directly. This is the amount of time the radio waits before it transmits the first MDC RAC packet. Valid entries are 0 (zero) to 6350 ms, in 50-ms increments.

RAC Ack Alert Tone

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the Repeater will indicate acceptance of the RAC packet by sounding four beeps.

RAC Preambles

*This field is not accessible.*

# MDC System Remote Options

# D F D C I I

From the MAIN MENU, press **F4**, **F6**, **F4**, **F3** and then **F9** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...MDC:SYSTEMS:OPTIONS:REM OPTIONS	Enter or Scroll to Select Value.								
MDC System.....1 MDC SYSTEM REMOTE OPTIONS ----- Remote Mon/Radio Trace....Enabled Remote Radio Mode....Radio Trace Tx Base Time (sec)..... 10 Rx Base Time (sec).....10									
F1 HELP	F2	F3 PREV SYS	F4 NEXT SYS	F5	F6	F7	F8	F9	F10 EXIT

*This screen is available only if the radio is Remote Monitor capable. This screen contains more options for MDC remote systems. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

## Function Key Descriptions

- F3 - PREV SYS**                      Accesses the previous system.
- F4 - NEXT SYS**                     Accesses the next system.

## Field Definitions

- MDC System**                        Use the UP/DOWN arrow keys to access a different MDC system, or directly enter the number of the system. The **F3/F4** function keys can also be used to move between systems.
- Remote Mon/Radio Trace**        Use the UP/DOWN arrow keys to enable/disable the MDC Remote Monitor/Radio Trace feature. If the MDC Remote Monitor/Radio Trace feature is enabled, the radio will be able to decode an MDC Remote Monitor or Radio Trace command sent from the dispatch console. After decoding this command, the radio will key up its transmitter for a time period calculated using the Tx Base Time and another value embedded within the Remote Monitor/Radio Trace command.

## Remote Radio Mode

Use the UP/DOWN arrow keys to make your selection. This feature allows the radio to operate in one of two possible states when it decodes an MDC Remote Monitor/Radio Trace command:

Radio Trace	The radio will automatically key up, sending unmodulated carrier.
Remote Monitor	The radio will automatically key up and unmute the microphone thus sending voice on the channel.

For each MDC Remote Monitor/Radio Trace command decoded by the radio, the radio will key up and stay keyed for the time indicated by the Tx Base Time and the dispatch console value. *The dispatch console value CANNOT be controlled by the subscriber unit.*

## Tx Base Time (sec)

Use the UP/DOWN arrow keys to select the desired MDC Tx Base Time or enter a value directly. The MDC Tx Base Time is a value used to calculate the period that a radio will key up after receiving an MDC Remote Monitor/Radio Trace command. This Tx Base Time is multiplied by a second value that will be sent from the dispatch console and transmitted to the radio via an MDC Remote Monitor/Radio Trace command.

The valid range is 10 to 120 seconds in 10-second increments. The multiplier (second value) can range from 0 to 6. If effect, the radio can have a key up time period ranging from 0 (zero) to 720 seconds.

# MDC Call List Table

## D F D D

From the MAIN MENU, press **F4**, **F6**, and then **F4** twice to access this screen.

MOTOROLA Radio Service Software					Enter or Scroll to Select Value.				
ASTRO Model:									
...CHANGE/VIEW:CONV:MDC:MDC CALL LIST									
CALL LIST TABLE									
-----									
#	Call ID	Call Text		#	Call ID	Call Text			
--	-----	-----		--	-----	-----			
1	----	CALL 1							
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	CALL ID			CALL ID					

This screen lists the Call IDs and text for each member of the call list. The user can thus target a radio or set of radios when an individual or group call has to be sent out. The ID entries in this table are stored in the radio and made available to the user in Selective Call or Call Alert operation.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F2 - ADD CALL ID**

Adds a Call ID.

**F5 - DELETE CALL ID**

Deletes the highlighted Call ID. You will be prompted for confirmation before the ID is actually deleted.

## Field Definitions

Number (#)	The system automatically assigns a number to the Call ID entry when the user adds an entry.
Call ID	<p>Enter the four-digit (hexadecimal) MDC CALL ID comprised of hexadecimal digits A through F for this member of the call list. The Call ID is used to target a radio when an individual or group call has to be sent to that radio or set of radios. The valid range of values is 1 through FFFF.</p> <p>An MDC Call ID is either an Individual Call ID or a Group Call ID. The RSS interprets entries as follows:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> A Call ID which begins with the hexadecimal digit “E” is considered a Group ID. <i>IDs of the form “Exxx” (where x implies any hexadecimal digit) should therefore be avoided for Individual/Primary ID specification.</i></li><li><input type="checkbox"/> A Call ID beginning with a digit other than “E” is treated as an Individual ID.</li></ul> <p><i>The number of characters for the ID alias labelled Call Text is automatically determined according to the display capability of the radio.</i></p> <p><b>Note:</b> The hexadecimal digit ‘F’ serves as a wild card, so it can be strategically placed in a Call ID to make it match other Call IDs, thus creating the effect of a group ID. “FFFF” for instance would specify all radios in the system.</p>
Call Text	Enter the alphanumeric name for this Call ID. This name will appear on the radio display for the sake of convenience.

# MDC Repeater ID D F D E

From the MAIN MENU, press **F4**, **F6**, **F4** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Enter ID (Only 0-9 Digits Allowed).				
MAIN:CHANGE/VIEW:CONV:MDC:RPTR ID									
MDC REPEATER ID -----									
#	Repeater ID				#	Repeater ID			
--	-----				--	-----			
1	0001								
2	0001								
3	0002								
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	ID			ID					

This screen allows you to view and change values for the MDC Repeater ID's to be used with RAC. For Conventional personalities, RAC must be enabled on a personality-by-personality basis and the correct options must be selected for each personality.

**Note:** When setting up MDC Repeater IDs, make sure that the MDC Repeater ID list is properly filled out.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

F2 - ADD ID

Adds a Repeater ID entry and its associated index into the Repeater ID list. The maximum number of entries is 16.

F5 - DELETE ID

Deletes the highlighted Repeater ID. You will be prompted for confirmation before the ID is actually deleted.

## Field Definitions

# (Number)

This column holds the index number of each Repeater ID.

Repeater ID

Use the UP/DOWN arrow keys to choose the numerical ID for each Repeater or enter a value directly. Valid entries range from 0001 to 9999 in increments of 1.

## ASTRO Menu

# D F E

From the MAIN MENU, press **F4**, **F6** and then **F5** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW:CONV:ASTRO	Select Function F1 - F10.								
ASTRO CONFIGURATION MENU -----									
F1 - HELP F2 - ASTRO Radio Wide Configuration F3 - ASTRO Systems F4 - ASTRO Call List Data F5 - ASTRO Data Peripheral F6 - ASTRO Conventional Talkgroups F7 - F8 - F9 - F10 - EXIT, Return to Conventional Menu									
F1 HELP	F2 ASTRO	F3 ASTRO	F4 CALL	F5 DATA	F6 TLK GP	F7	F8	F9	F10 EXIT
	OPTIONS	SYSTEMS	LIST	PERIPH	LIST				

This screen allows you to navigate through the ASTRO edit screens. The options in these menus pertain only to ASTRO radio features. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

### F2 - ASTRO OPTIONS

Brings up a screen where you can edit options relating to all ASTRO channels.

### F3 - ASTRO SYSTEMS

Brings up a screen where you can configure the radio to work with various ASTRO systems.

### F4 - CALL LIST

Brings up a screen where you can add, define, and delete call IDs to be used when addressing an individual radio or a group of radios.

### F5 - DATA PERIPH (ASTRO Data Peripheral)

*This selection will be visible for Mobiles only.* Brings up a screen where you can view and edit all the ASTRO Mobile Data Peripheral options including RS-232 Packet Data Interface options.

### F6 - TLK GP LIST

This selection will be visible only for radios equipped with CAI digital operation. Selecting F6 will bring up a screen where you can configure ASTRO Conventional Talkgroup Lists.

# ASTRO Radio Wide Options

## D F E B

From the MAIN MENU, press **F4**, **F6**, **F5** and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO PORTABLE Model: ...CONV:ASTRO:ASTRO RADIO WIDE	Enter or Scroll to Select Value.								
ASTRO RADIO WIDE ----- Data Frame Sync Seek Period (ms).... 750 Data Tx Long Random Range (ms).....2000 Data Tx Resp Random Range (ms).....1000									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### Portables Only

MOTOROLA Radio Service Software ASTRO MOBILE Model: ...CONV:ASTRO:ASTRO RADIO WIDE	Enter or Scroll to Select Value.																														
ASTRO RADIO WIDE ----- <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Max CAI Data Tx Attempts..... 4</td> <td style="width: 20%;">Num Data Group ID</td> <td style="width: 20%;"></td> </tr> <tr> <td>Talk Inhibit Tone.....Enabled</td> <td></td> <td></td> </tr> <tr> <td>Max CAI Packet Size.....512</td> <td>1</td> <td>1</td> </tr> <tr> <td>CAI Data Response Timer (ms).....3300</td> <td>2</td> <td>1</td> </tr> <tr> <td>CAI Data Min Response Timer (ms)....700</td> <td>3</td> <td>1</td> </tr> <tr> <td>Data Frame Sync Seek Period (ms)....750</td> <td>4</td> <td>1</td> </tr> <tr> <td>Data Tx Short Random Range (ms).....50</td> <td>5</td> <td>1</td> </tr> <tr> <td>Data Tx Long Random Range (ms).....2000</td> <td>6</td> <td>1</td> </tr> <tr> <td>Data Tx Resp Random Range (ms).....1000</td> <td>7</td> <td>1</td> </tr> <tr> <td></td> <td>8</td> <td>1</td> </tr> </table>		Max CAI Data Tx Attempts..... 4	Num Data Group ID		Talk Inhibit Tone.....Enabled			Max CAI Packet Size.....512	1	1	CAI Data Response Timer (ms).....3300	2	1	CAI Data Min Response Timer (ms)....700	3	1	Data Frame Sync Seek Period (ms)....750	4	1	Data Tx Short Random Range (ms).....50	5	1	Data Tx Long Random Range (ms).....2000	6	1	Data Tx Resp Random Range (ms).....1000	7	1		8	1
Max CAI Data Tx Attempts..... 4	Num Data Group ID																														
Talk Inhibit Tone.....Enabled																															
Max CAI Packet Size.....512	1	1																													
CAI Data Response Timer (ms).....3300	2	1																													
CAI Data Min Response Timer (ms)....700	3	1																													
Data Frame Sync Seek Period (ms)....750	4	1																													
Data Tx Short Random Range (ms).....50	5	1																													
Data Tx Long Random Range (ms).....2000	6	1																													
Data Tx Resp Random Range (ms).....1000	7	1																													
	8	1																													
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT																						

### Mobiles Only

This screen allows you to change and view the additional radio wide parameters which pertain to an ASTRO Radio. *The various settings selected on this screen will affect the ASTRO channels of all radios set up under any ASTRO system.* Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Field Definitions

Max CAI Data Tx Attempts

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to select the Maximum Transmit Attempts per Common Air Interface (CAI) Data Packet or enter a value directly. If the radio fails to receive a positive acknowledgment to a confirmed packet transmission, it will attempt to re-send the confirmed CAI data packet. This field determines the maximum number of times (including the initial attempt) that the radio will retry a confirmed CAI data packet without receiving a positive CAI response before aborting. The valid range is 2 to 10.

Max CAI Packet Size

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to select the maximum Common Air Interface (CAI) Data Packet size. The value in this field determines the maximum number of bytes that can be transported in a single CAI data packet. The valid range of values is 16 to 512 in increments of 16.

Talk Inhibit Tone

*This field will be visible for radios equipped with Data Peripheral only.* Use the UP/DOWN arrow keys to enable/disable the Talk Inhibit Tone feature. The Talk Inhibit Tone is used to alert the user of a collision between voice and data transmissions.

When this field is enabled, the radio will sound the inhibit tone any time the user presses the PTT while the radio is already engaged in transmitting a data packet. This tone will last for the duration of the data packet.

CAI Data Response Timer (ms)

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to select the Common Air Interface (CAI) Response Timer value or enter a value directly. This timer determines how long the radio will wait for a CAI response before re-trying a confirmed CAI data packet transmission. Timer values may range from 100 to 5000 ms in 100-ms increments.

CAI Data Min Response Timer (ms)

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to scroll through the available Common Air Interface (CAI) Data Minimum Response Timer values. The value may also be entered directly. This timer defines the minimum idle time required over the air to allow a confirmed CAI response to be sent across the RF channel. This parameter should be slightly greater than the data throughput delay from the RNC (the data controller) to the radio. Timer values may range from 50 to 2000 ms in 50-ms increments.

**Note:** *This parameter should NOT be changed without first verifying the particular throughput of your system.*

Data Frame Sync Seek Period (ms)

Use the UP/DOWN arrow keys to select the Data Frame Sync Seek Period (FSSP) value. This is the time period for which the radio will “listen” for a Frame Sync Sequence. The presence of the Frame Sync Sequence indicates that there is activity on the channel. If no Frame Sync Sequence is detected within this time period, the radio will assume that the channel is idle and transmit the next packet queued for transmission.

This value should be set to the maximum over-the-air data packet duration. For instance, for a maximum CAI packet size of 512 bytes, the value should be set to 750 ms. The value for Data FSSP may range from 0 to 5000 ms in 50-ms increments.

**Note:** For proper operation on a channel with ASTRO voice present, this field should be set to no shorter than 200 ms due to the ASTRO voice frame size. For more details on data channel access operation, refer to the APCO 25 Common Air Interface Operational Description for Conventional Channel.

Data Tx Short Random Range  
(ms)

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to select the Data Tx Short Random Range value or enter a value directly. Before the radio can transmit a data packet, it must check the channel status to verify that the channel is clear. The data channel access process checks this status on a random basis. This timer represents the MAXIMUM time that the radio will wait after it has received the FIRST qualified Frame Sync Sequence to check status.

Increasing this value reduces the potential of collision with other radios attempting to transmit data (seize the channel), but it also increases the channel access delay. This value may range from 50 to 500 ms in 50-ms increments.

**Note:** For more details on data channel access operation, refer to the APCO 25 Common Air Interface Operational Description for Conventional Channels.

Data Tx Long Random Range  
(ms)

Use the UP/DOWN arrow keys to select the Data Tx Long Random Range value. This value may also be entered directly. This field indicates the upper bound of the uniform random range for the back off delay period after the radio senses a busy channel status symbol for normal Tx messages. Before the radio can transmit a data packet, it must check the channel status to verify that the channel is clear. The data channel access process checks this status on a random basis.

If the Common Air Interface (CAI) data packet to be transmitted is other than an acknowledgment, this timer represents the MAXIMUM time that the radio will wait after it detects a BUSY Channel Status Symbol to re-check the Channel Status Symbols for permission to transmit. This value may range from 50 to 5000 ms in 50-ms increments.

**Note:** For more details on data channel access operation, refer to the APCO 25 Common Air Interface Operational Description for Conventional Channels.

Data Tx Resp Random Range  
(ms)

Use the UP/DOWN arrow keys to select the Data Tx Response Random Range value. This value may also be entered directly. Before the radio can transmit a data packet, it must check the channel status to verify that the channel is clear. The data channel access process checks this status on a random basis.

If the Common Air Interface (CAI) data packet to be transmitted is an acknowledgment, this timer represents the MAXIMUM time that the radio will wait after it detects a BUSY Channel Status Symbol to re-check the Channel Status Symbols for permission to transmit. This value may range from 50 to 1000 ms in 50-ms increments.

Increasing this value reduces the potential of collision with other radios attempting to transmit data (seize the channel), but it also increases channel access delay.

**Note:** For more details on data channel access operation, refer to the APCO 25 Common Air Interface Operational Description for Conventional Channels.

Data Group ID

*This field will be visible for Mobiles only.* Use the UP/DOWN arrow keys to select the Common Air Interface (CAI) Data Group ID value. This value may also be entered directly.

The CAI Data Group ID associates the radio with a specific group for group addressing of data messages. This ID is used only for address decoding on data receive. When data is being transmitted by the radio, the Data Group ID is NOT used. A radio can be a member of up to 8 groups. Values for this ID may range from 10,000,000 to 16,777,214.

# ASTRO Systems D F E C

From the MAIN MENU, press **F4**, **F6**, **F5** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Use UP/DOWN Arrows to Select Choice.							
MAIN:CHANGE/VIEW:CONV:ASTRO:SYSTEMS									
<pre> ASTRO System.....1                                 ASTRO SYSTEMS                                 -----                                 Emergency.....Enabled                                 Emergency Type.....Alarm Only                                 Acknowledge Alert Tone.. Enabled  Individual ID.....1                                 ----- Talkgroup ID.....1 Scan Signal Time (ms).....30.0 Scan Voice Detect Time (ms)...400 Preamble Length (ms).....80 Status.....Enabled Status Request.....Disabled Message.....Disabled                                 </pre>									
		<pre> Revert Table ----- Num  Zone Channel ---  ---  -----   1   1    1   2   1    1   3   1    1                                 </pre>							
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE		SOFT		MORE	EXIT
	SYS	SYS	SYS	SYS		ID		OPTIONS	

This screen allows you to change and view ASTRO system parameters. *The fields shown on the screen are only for the system shown.* Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

- F2 - ADD SYS** Adds an ASTRO system.
- F3 - PREV SYS** Accesses the previous ASTRO system.
- F4 - NEXT SYS** Accesses the next ASTRO system.
- F5 - DELETE SYS** Deletes the current ASTRO system. You will be prompted for confirmation before the system is actually deleted.
- F7 - SOFT ID** *This function will be visible only if the Soft ID option was purchased for the current radio.* Brings up a screen where you can edit Soft ID parameters.
- F9 - MORE OPTIONS** Brings up a screen where you can view and edit additional ASTRO options.

## Field Definitions

ASTRO System	Use the UP/DOWN arrow keys to scroll through the available ASTRO systems. Alternately, the <b>F3/F4</b> functions keys can be used to navigate through the available systems.
Individual ID	This field displays the Individual ID for the current ASTRO system. This ID is unique to each radio in the system.
Talkgroup ID	<i>This field will not be visible for radios equipped with CAI Digital Operation.</i> This is the Talkgroup ID associated with the ASTRO system. This ID is used for Select Calls to a talkgroup as well as partitioning many radios into similar talkgroups.
Scan Signal Time (ms)	<i>This field will not be visible for radios equipped with CAI Digital Operation.</i> Use the UP/DOWN arrow keys to make your selection or enter a value directly. Scan Signal Time is the time that scan will wait on an ASTRO channel for a signal before moving on to the next scan channel.
Scan Voice Detect Time (ms)	<i>This field will not be visible for radios equipped with CAI Digital Operation.</i> Use the UP/DOWN arrow keys to make your selection or enter a value directly. This is the time that scan will wait on an ASTRO Channel after a signal is detected. This timer is used to qualify the signal with voice or data and the correct ID or talkgroup match.
Preamble Length	Use the UP/DOWN arrow keys to scroll through the available Preamble Length values, or enter the value directly.  This field is the minimum number of ASTRO bit sync preamble bits sent at the beginning of all ASTRO transmissions from the radio for ASTRO Conventional Systems. The valid range of values is 0 to 255. The factory default is 80.
Status	Use the UP/DOWN arrow keys to enable/disable this option. If this feature is enabled, the user will be able to select and transmit a specific status from a list programmed into the radio. <i>This field must be enabled for the Status Request field in this screen to be visible.</i> If this field is set to disabled, the user will not be able to select and transmit a status from the list programmed into the radio.
Status Request	<i>This field will not be visible unless the Status field on this screen is set to Enabled.</i> Use the UP/DOWN arrow keys to enable/disable this option. If this feature is enabled, the radio will respond to a remote status interrogation with the last attempted status.
Message	Use the UP/DOWN arrow keys to enable/disable this option. If this feature is enabled, the user can select and transmit a specific message from a list programmed in the radio.
Emergency	This field indicates whether or not Emergency operation is enabled for this ASTRO system.

Emergency Type

*This field will be visible only if the Emergency field has been set to Enabled.*  
Use the UP/DOWN arrow keys to choose one of the following settings:

Alarm Only	An emergency message is repeatedly sent to the base station until it is cancelled for one of the following reasons: All the allowed retries (both polite and impolite) have been sent; An acknowledgment is received from the base station; A first press of the PTT button is executed; or A long press of the emergency button is executed.
Alarm & Call	An emergency message is repeatedly sent to the base station until: All the allowed retries (both polite and impolite) have been sent; or An acknowledgment is received from the base station. Once an acknowledgment is received, the user can talk to the base station. An emergency PTT ID will be sent with the voice on each PTT press. The emergency call can be cancelled by a long press of the emergency button.

Both types of emergency support reverting (transmitting emergency on a predetermined channel).

Acknowledge Alert Tone

Use the UP/DOWN arrow keys to enable/disable this option. If this feature is enabled, an emergency acknowledge beep will sound when the radio receives acknowledgment of its emergency call.

Revert Channel Table

The Emergency Revert Channel table contains the channels (pointed to in the Conventional personalities) to which the radio reverts when entering Emergency call mode. Enter the zone numbers and the channel numbers in the table. Each ASTRO personality will select one of these channels or choose itself.

First, create the necessary personalities. Then go to the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**) and enter channel information. You will then be able to set the ASTRO emergency channels.

**Note:** *Emergency revert channels cannot have Quik-Call II enabled on them, nor can they be Receive Only channels.*

## Soft ID

# D F E C G

From the MAIN MENU, press **F4**, **F6**, **F5**, **F3** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CONV:ASTRO:SYSTEMS:SOFT ID	Use UP/DOWN Arrows to Select Choice.								
SOFT ID ----- Soft ID Feature.....Disabled Soft ID.....									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen will be accessible only if the Soft ID option was purchased for the current radio. This screen allows you to enable or disable the Soft ID option. Press **Tab** to select the desired field, or press the desired function key (**F1** - **F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

## Field Definitions

Soft ID Feature

Use the UP/DOWN arrow keys to enable/disable this option. When this option is enabled, you will be allowed to enter a Soft ID.

Soft ID

Enter the Soft ID. The Soft ID will be transmitted with each press of the PTT button. The Soft ID can be up to eight characters long and can include the capital letters A through Z, the digits 0 through 9, "\*", "#", "-", "/", and spaces.

# ASTRO System Options

## D F E C I

From the MAIN MENU, press **F4**, **F6**, **F5**, **F3** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CONV:ASTRO:SYSTEMS:OPTIONS		Use UP/DOWN Arrows to Select Choice.																
Astro System.....1 <div style="text-align: center;">ASTRO SYSTEM OPTIONS -----</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Sel Call Reset.....Auto w/ Carr</td> <td style="width: 50%;">Emergency</td> </tr> <tr> <td>Auto Reset Time (sec).....5</td> <td>Priority Tx Inhibit.....Enabled</td> </tr> <tr> <td>Limited Patience (sec).....53</td> <td>Limited Patience Time (sec)....0</td> </tr> <tr> <td></td> <td>Polite Retries.....5</td> </tr> <tr> <td></td> <td>Impolite Retries.....15</td> </tr> <tr> <td></td> <td>Global TX Multiplier....Disabled</td> </tr> <tr> <td>Radio Inhibit.....Disabled</td> <td>TX Multiplier.....1</td> </tr> <tr> <td>Radio Check.....Disabled</td> <td>Silent Override w/Mon....Disabled</td> </tr> </table>			Sel Call Reset.....Auto w/ Carr	Emergency	Auto Reset Time (sec).....5	Priority Tx Inhibit.....Enabled	Limited Patience (sec).....53	Limited Patience Time (sec)....0		Polite Retries.....5		Impolite Retries.....15		Global TX Multiplier....Disabled	Radio Inhibit.....Disabled	TX Multiplier.....1	Radio Check.....Disabled	Silent Override w/Mon....Disabled
Sel Call Reset.....Auto w/ Carr	Emergency																	
Auto Reset Time (sec).....5	Priority Tx Inhibit.....Enabled																	
Limited Patience (sec).....53	Limited Patience Time (sec)....0																	
	Polite Retries.....5																	
	Impolite Retries.....15																	
	Global TX Multiplier....Disabled																	
Radio Inhibit.....Disabled	TX Multiplier.....1																	
Radio Check.....Disabled	Silent Override w/Mon....Disabled																	
F1 HELP	F2	F3 PREV SYS																
	F4 NEXT SYS	F5																
	F6	F7																
	F8	F9 AST SYS REMOTE																
	F10 EXIT																	

*This screen is for radios equipped with VSELP*

MOTOROLA Radio Service Software ASTRO Model: ...CONV:ASTRO:SYSTEMS:OPTIONS		Use UP/DOWN Arrows to Select Choice.																		
Astro System.....1 <div style="text-align: center;">ASTRO SYSTEM OPTIONS -----</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Talkgroup Hang Time (sec).0.000</td> <td style="width: 50%;">Emergency</td> </tr> <tr> <td>Limited Patience (sec).....53</td> <td>Priority Tx Inhibit.....Enabled</td> </tr> <tr> <td></td> <td>Limited Patience Time (sec)....0</td> </tr> <tr> <td></td> <td>Polite Retries.....5</td> </tr> <tr> <td></td> <td>Impolite Retries.....15</td> </tr> <tr> <td></td> <td>Global TX Multiplier....Disabled</td> </tr> <tr> <td>Radio Inhibit.....Disabled</td> <td>TX Multiplier.....1</td> </tr> <tr> <td>Radio Check.....Disabled</td> <td>Silent Override w/Mon....Disabled</td> </tr> <tr> <td>CAI Data Registration....Enabled</td> <td></td> </tr> </table>			Talkgroup Hang Time (sec).0.000	Emergency	Limited Patience (sec).....53	Priority Tx Inhibit.....Enabled		Limited Patience Time (sec)....0		Polite Retries.....5		Impolite Retries.....15		Global TX Multiplier....Disabled	Radio Inhibit.....Disabled	TX Multiplier.....1	Radio Check.....Disabled	Silent Override w/Mon....Disabled	CAI Data Registration....Enabled	
Talkgroup Hang Time (sec).0.000	Emergency																			
Limited Patience (sec).....53	Priority Tx Inhibit.....Enabled																			
	Limited Patience Time (sec)....0																			
	Polite Retries.....5																			
	Impolite Retries.....15																			
	Global TX Multiplier....Disabled																			
Radio Inhibit.....Disabled	TX Multiplier.....1																			
Radio Check.....Disabled	Silent Override w/Mon....Disabled																			
CAI Data Registration....Enabled																				
F1 HELP	F2	F3 PREV SYS																		
	F4 NEXT SYS	F5																		
	F6	F7																		
	F8	F9 AST SYS REMOTE																		
	F10 EXIT																			

*This screen is for radios equipped with CAI Digital Operation*

These screens allow you to view and edit ASTRO system options. Press **Tab** to select the desired field, or press the desired function key (**F1** - **F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F3** - PREV SYS

Accesses the previous ASTRO system.

**F4** - NEXT SYS

Accesses the next ASTRO system.

## F9 - ASTRO SYS REMOTE

Brings up a screen where you can view/edit options relating to ASTRO System Remote Monitor/Radio Trace features.

### Field Definitions

ASTRO System

Use the UP/DOWN arrow keys or the **F3/F4** keys to scroll through the available systems.

Talkgroup Hang Time

This field is used to set the duration of the Talkgroup Hang Timer which is started at the end of a system wide Talkgroup call. While the Talkgroup Hang Timer is active, the Talkgroup ID 65535 will be used for all Conventional Talkgroup calls. The range is from 0.000 to 6.375 seconds in 0.025 second increments. The factory default is 0.000 seconds.

Sel Call Reset

*This field is visible for radios equipped with VSELP Digital Operation only.* Use the UP/DOWN arrow keys to make your selection. Select Call Reset determines how the Squelch Mode is reset after the radio has received a select call and has unmuted. The radio will return from Carrier Squelch mode to Select Call Packet Required mode according to the setting in this field. The available choices are:

Manual	<i>Manual is only available for Portable radios.</i> The radio can be reset by pressing the Monitor button.
Auto	The radio will be reset after the Select Call Auto Reset timer has expired. The mode can also be reset by pressing the Monitor button.
Auto W/ Carrier Override	The radio will be reset after the Select Call Auto Reset timer has expired and no carrier is detected (conversation ended). The mode can also be reset by pressing the Monitor button.

Auto Reset Time (sec)

*This field is visible for radios equipped with VSELP Digital Operation only.* Use the UP/DOWN arrow keys to make your selection or enter a value directly. This is the time that the radio will remain in the Carrier Squelch mode after it has received a Select Call directed to it. Once the auto reset time has expired, the radio will reset to the Select Call squelch mode. The valid range is 0 to 255 seconds.

Limited Patience (sec)

Use the UP/DOWN arrow keys to make your selection or enter a value directly. This is the amount of time the radio will send out polite ASTRO signals before sending out an impolite signal. The valid range is 1 to 255 seconds. A value of Infinite is also available.

Radio Inhibit

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will go into a dormant state when it receives a Remote Inhibit command. In this state:

- The radio's receiver audio is muted;
- Transmit audio path is blocked;
- All operator controls are rendered inoperative;
- Channel Scan is stopped on the Radio Operating Mode which received the command; and

All LEDs turned off.

This command is useful in preventing unauthorized use when the radio is stolen or lost. The radio can be uninhibited by sending a Radio Enable command or by reading and writing the codeplug with the RSS.

Radio Check

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the dispatcher can check the state of the radio (turned on or off) when it is within the range of the system (in Clear mode).

Priority Tx Inhibit

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, all other radios on the system will decode the Emergency Acknowledgment or the Emergency PTT Code Word, and will inhibit their transmitters for the time in the acknowledgment or until the receive carrier goes away.

The user's call request has priority over all other types of call traffic. The radio will transmit voice and an Emergency code word if the user presses the PTT button or the dispatcher's alarm acknowledge has a command to remotely key up.

Limited Patience Time (sec)

Use the UP/DOWN arrow keys to make your selection or enter a value directly. When the radio is in an Emergency call mode, this is the amount of time the radio will wait before impolitely sending voice, if voice transmission is inhibited by the Emergency Priority Inhibit feature. The valid range is 0 to 255 seconds.

Polite Retries

Use the UP/DOWN arrow keys to make your selection or enter a value directly. This is the number of times that the radio will attempt to transmit an ASTRO Emergency message while no one else is transmitting. A polite attempt is one that is transmitted only when no one else is transmitting. The valid range is 0 (zero) to 14 seconds. A value of Infinite is also available.

Impolite Retries

Use the UP/DOWN arrow keys to make your selection or enter a value directly. This is the number of times that the radio will attempt to transmit an emergency message even if someone else is transmitting at the same time. An impolite attempt is one that is transmitted when someone else is transmitting. The valid range of values is 1 to 15.

Global Tx Multiplier

Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the ASTRO Default Tx Multiplier value is doubled. This effectively doubles the time period that the transmitter will key after the radio exhausts all retries without receiving an Acknowledgment during Emergency Call. If this feature is disabled, there will be no change in the time period that the transmitter will key up after the radio exhausts all retries.

Tx Multiplier

Use the UP/DOWN arrow keys to make your selection or enter a value directly. This value indicates how long the transmitter will key after the radio exhausts all retries without receiving an Acknowledgment during Emergency Call. This value is multiplied by the radio's base time. The valid range is 0 (zero) to 3.

Silent Override w/ Mon

*This feature is visible for Portables only.* Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the Monitor

button will override Silent Emergency and unmute the radio. If this field is set to Disabled, the Monitor button cannot be used to unmute the radio.

#### CAI Data Registration

When this field is enabled, the subscriber radio will initiate a CAI data registration sequence to a host computer connected to the radio system infrastructure. The radio events that trigger this CAI data registration sequence include radio power up, mode change, exiting scan, radio enable, and exiting external keyloading. Failure to register with the host computer inhibits some RS232 Packet Data operations in the subscriber radio.

If this field is disabled, the CAI data registration sequence is not initiated and registration is not required to perform all RS232 Packet Data operations.

This function will be enabled or disabled on a per ASTRO system basis. The factory default is Enabled.

# ASTRO System Remote Options

## D F E C I I

From the MAIN MENU, press **F4**, **F6**, **F5**, **F3** and then **F9** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...ASTRO:SYSTEMS:OPTIONS:REM OPTIONS	Use UP/DOWN Arrows to Select Choice.								
Astro System.....1 <p style="text-align: center;">ASTRO SYSTEM REMOTE OPTIONS -----</p> Remote Mon/Radio Trace... Enabled Remote Radio Mode....Radio Trace Tx Base Time (sec).....10									
F1 HELP	F2	F3 PREV SYS	F4 NEXT SYS	F5	F6	F7	F8	F9	F10 EXIT

*This screen is available only if the Remote Monitor Option has been added. This screen allows you to view and edit features relating to the radio's ASTRO system remote capabilities. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

### Function Key Descriptions

- F3 - PREV SYS**                      Accesses the previous ASTRO system.
- F4 - NEXT SYS**                     Accesses the next ASTRO system.

### Field Definitions

- ASTRO System**                      Use the UP/DOWN arrow keys or the **F3/F4** function keys to navigate through the available ASTRO systems. ASTRO systems can be configured in the ASTRO SYSTEMS screen (**F4/F6/F5/F3**).
- Remote Mon/Radio Trace**        Use the UP/DOWN arrow keys to enable/disable the ASTRO Remote Monitor/Radio Trace feature. If this feature is enabled, the radio will be able to decode an ASTRO Remote Monitor or Radio Trace command sent from the dispatch console. After decoding this command, the radio will key up its transmitter for a time period calculated using the Tx Base Time and another value embedded within the Remote Monitor/Radio Trace command.

Remote Radio Mode

*This field will be visible for view-only on Mobile radios. Use the UP/DOWN arrow keys to select the ASTRO Remote Radio Mode feature from among the following:*

Radio Trace	The radio will automatically key up, sending unmodulated carrier.
Remote Monitor	The radio will automatically key up and unmute the microphones sending voice on the channel.

For each ASTRO Remote Monitor/Radio Trace command decoded by the radio, the radio will key up and stay keyed for the time indicated by the Tx Base Time and the dispatch console value. *The dispatch console value cannot be controlled by the subscriber unit.*

Tx Base Time (sec)

Use the UP/DOWN arrow keys to select the desired ASTRO Tx Base Time or enter a value directly. The ASTRO Tx Base Time is a value used to calculate the period that a radio will key up after receiving an ASTRO Remote Monitor/Radio Trace command. This Tx Base Time is multiplied by a second value that is sent from the dispatch console and transmitted to the radio via an ASTRO Remote Monitor/Radio Trace command.

The valid range is 10 to 120 seconds in 10-second increments. The multiplier (second value) may range from 0 (zero) to 6, thus allowing the radio to have a key up time period ranging from 0 (zero) to 720 seconds.

# ASTRO Call List

## D F E D

From the MAIN MENU, press **F4**, **F6**, **F5** and then **F4** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CONV:ASTRO:ASTRO CALL LIST				Use UP/DOWN Arrows to Select Choice.					
CALL LIST TABLE -----									
#	Type	Call ID	Call Text	#	Type	Call ID	Call Text		
--	----	-----	-----	--	----	-----	-----		
1	Ind	-----	CALL 1						
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	CALL ID			CALL ID					

This screen allows you to view and edit Conventional ASTRO Call IDs and their associated names or aliases. Press **Tab** to select the desired field, or press the desired function key (**F1** - **F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

**F2** - ADD CALL ID

Adds a Call ID entry to the Call List table.

**F5** - DELETE CALL ID

Deletes the highlighted Call ID entry from the Call List table. You will be prompted for confirmation before the entry is actually deleted.

## Field Definitions

Number

*This is a view-only field* that contains the automatically generated number of the Call ID. When you press **F2** to add a Call ID, a number is automatically assigned to the Call ID.

Type

Use the UP/DOWN arrow keys to make your selection from among the following:

Ind	Choose this setting if this entry is to be assigned to a single radio in the system.
Group	Choose this setting if this entry is to be assigned to a group of radios in the system.

Call ID

This field contains the ASTRO Individual Call ID or the ASTRO Group Call ID for this member of the call list.

The Call ID is a unique number used to target a radio or group of radios when a call has to be sent to the radio (s). A Selective Call or Call Alert placed to an Individual ID is received by the specific user. The same call placed to a Group ID reaches all members sharing that Group ID.

**Note:** *Radios equipped with CAI Digital Operation*, Group IDs cannot be used with selective call.

**Note:** For radios equipped with CAI digital operation, Group Call ID has the special value 65535, which selects all groups and cannot be assigned to any particular group. The range of Individual Call IDs is from 1 to 9999999. The range of Group Call IDs is from 1 to 65535.

**Note:** *For radios equipped with VSELP Digital Operation*, Group Call ID has the special value 4095, which selects all groups and cannot be assigned to any particular group. The range of Individual Call IDs is from 1 to 16773119. The range of Group Call IDs is from 1 to 4095.

Call Text

Enter the alphanumeric name for this Call ID. This name will appear on the radio display to facilitate ease of use.

# ASTRO Data Peripheral (*Mobiles Only*)

## D F E E

From the MAIN MENU, press **F4**, **F6** and then **F5** twice to access this screen.

MOTOROLA Radio Service Software ASTRO MOBILE Model:	Enter or Scroll to Select Value.								
MAIN:CHANGE/VIEW:CONV:ASTRO:DATA PER									
ASTRO DATA PERIPHERAL ----- IP Address 254.254.254.254 Baud Rate.....9600 Stop Bits.....1									
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

### *Mobiles Only*

*This screen is only available if the Data Peripheral Capable Option is added. This screen allows you to view and edit ASTRO Mobile Data Peripheral options. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

### Field Definitions

IP Address

Use the UP/DOWN arrow keys to select the desired Internet Protocol (IP) Address of the radio or enter an address directly. This 32-bit address is only used for Radio Control Protocol traffic between the Mobile Data Peripheral and the radio. Thus, all radios in a system may share the same IP address. The IP address may range from 001.001.001.001 to 254.254.254.254.

Baud Rate

Use the UP/DOWN arrow keys to select the desired RS232 Baud Rate. The Baud Rate indicates the rate at which data will travel over the RS232 port interface. Baud rate is measured in bits per second. This rate should be set to the rate supported by the attached Mobile Data Peripheral. Valid baud rates are 1200, 2400 and 9600.

Stop Bits

Use the UP/DOWN arrow keys to select the desired number of RS-232 Stop Bits. The Stop Bit data field indicates the number of stop bits per character over the RS-232 interface. Valid values for this field are 1 and 2.

# ASTRO Conventional Talkgroups D F E F

From the MAIN MENU, press **F4**, **F6**, **F5** and then **F6** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:					Use UP/DOWN Arrows to Select Choice.				
...CONV:ASTRO:ASTRO CALL LIST									
List Number.....1									
ASTRO CONVENTIONAL TALKGROUPS -----									
Talkgroup Alias.....Enabled					Individual Selective Call Key...1				
#	Talkgroup ID	Talkgroup Alias	Voice Secure/ Clear Strapping	Key Select					
---	---	---	---	---					
1	00001	TG 00002	Select	1					
1	00002	TG 00002	Select	1					
1	00003	TG 00002	Select	1					
1	00004	TG 00002	Select	1					
1	00005	TG 00002	Select	1					
1	00006	TG 00002	Select	1					
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD	PREV	NEXT	DELETE	ADD	DELETE			EXIT
	LIST	LIST	LIST	LIST	TLK GP	TLK GP			

*This screen is only available for radios equipped with CAI Digital Operation. This screen allows you to change/view parameters pertaining to the ASTRO Conventional Talkgroups which are members of a Talkgroup List.*

## Field Definitions

F2 - ADD LIST

Adds an ASTRO Conventional Talkgroup List.

F3 - PREV LIST

Views the previous ASTRO Conventional Talkgroup List.

F4 - NEXT LIST

Views the next ASTRO Conventional Talkgroup List.

F5 - DELETE LIST

Deletes the current ASTRO Conventional Talkgroup List.

F6 - ADD TLK GP (TALKGROUP)

Adds an ASTRO Conventional Talkgroup.

F7 - DELETE TLK GP

Deletes the current ASTRO Conventional Talkgroup.

## Field Definitions

List Number

This field represents the current ASTRO Conventional Talkgroup List.

Individual Selective Call

*For this field to be visible, the radio must be Multikey capable, and one or both of the following conditions must be true:*

1. *Secure Hardware Equipped on the Radio Wide Options (F4/F3/F2) screen is Enabled.*
2. *The radio is capable of Software Encryption and Software Encryption is Enabled on the Radio Wide Options screen (F4/F3/F2).*

This field represents the Secure Key Number used by the radio when the user makes an Individual Selective Call. This key applies to all

ASTRO Conventional Talkgroups within an ASTRO Conventional Talkgroup List. The factory default is 1.

Talkgroup Alias

Enabling this field allows the subscriber unit to display the Talkgroup Alias instead of the Talkgroup ID during Talkgroup Selection.

The alias can provide any textual reference which conveys a useful meaning for the Talkgroup to the user. For example, if the Fire Department has a Talkgroup ID of 01234, an alias of 'FIRE DEPT' will perfectly describe what this group is to the users, and the users no longer need to remember that the numerical Talkgroup ID of 01234 is for the Fire Department. The factory default is Enabled.

Talkgroup ID

This field is a five-digit decimal number designating a Talkgroup. Each Talkgroup in the Talkgroup List must have a Talkgroup ID. The valid range is 00001 to 65535. The factory default is 00002.

Talkgroup Alias Test

Each Talkgroup in the Talkgroup List may have a Talkgroup Alias. The Alias is designed to be a more meaningful shorthand description for the Talkgroup to the user. For example, if the Fire Department has a Talkgroup ID of 01234, an alias of 'FIRE DEPT' will perfectly describe what this group is to the user, and the user no longer needs to remember that the numerical Talkgroup ID of 01234 is for the Fire Department. The factory default is 'TG 00002'.

Voice Secure/Clear Strapping

This field enables the user to configure the Talkgroup's transmit mode. Three options are available:

Clear	The radio transmits to the Talkgroup without any voice encryption.
Secure	The radio transmits to the Talkgroup using a Secure Key. If the radio is Multikey capable, the Secure Key is defined by the Key Index selected for the Talkgroup. If the radio is single key capable, the Secure Key is the single Secure Key.
Select	The user is allowed to select either the Clear or Secure transmit mode via the Secure Select Switch. If the radio is Multikey capable and transmitting in the Secure mode, the Secure Key is defined by the Key Index. If the radio is single key capable, and transmitting in the Secure mode, the Secure Key is the single Secure Key.

The factory default is Select.

## Key Select

*For this field to be visible, the radio must be Multikey capable, and one or both of the following conditions must be true:*

- 1. Secure Hardware Equipped on the Radio Wide Options (F4/F3/F2) screen is Enabled.*
- 2. The radio is capable of Software Encryption and Software Encryption is Enabled on the Radio Wide Options screen (F4/F3/F2).*

This field is an index into the group of Hardware and Software Secure Keys currently defined in the radio. The key referenced by the Key index is the Secure Key used to transmit to the Talkgroup when the strapping is set to Secure. This key applies only to the specific Talkgroup within a Talkgroup List. The factory default is 1.

# MODAT D F F

From the MAIN MENU, press **F4** and then **F6** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Use UP/DOWN Arrows to Select Choice.												
MAIN:CHANGE/VIEW:CONV:MODAT													
MODAT ----- Unit ID (decimal).....0 Pretime (ms).....300  <div style="text-align: right;">           Revert Table            -----  <table border="1"> <thead> <tr> <th>Num</th> <th>Zone</th> <th>Channel</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>1</td> <td>1</td> </tr> <tr> <td>3</td> <td>1</td> <td>1</td> </tr> </tbody> </table> </div>		Num	Zone	Channel	1	1	1	2	1	1	3	1	1
Num	Zone	Channel											
1	1	1											
2	1	1											
3	1	1											
F1 HELP	F2	F3	F4	F5	F6	F7	F8	F9	F10 EXIT				

*This screen cannot be accessed if the MODAT software option was not purchased for the radio. This screen allows you to view and edit radio MODAT options. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.*

## Field Definitions

Unit ID (decimal)

Use the UP/DOWN arrow keys to make your selection or enter a four-digit decimal of the subscriber directly. The thousands digit must be to the left and the one's digit to the right. The valid range is 0000 to 8999.

Pretime (ms)

Use the UP/DOWN arrow keys to make your selection or enter a decimal value directly. Pretime is the time delay allowed for the system to activate prior to every transmission. During this interval, an unmodulated carrier is transmitted. Valid values range of 10 to 2550 ms in 10-ms increments.

Revert Channel Table

The Emergency Revert Channel table contains the channels (pointed to in the Conventional personalities) to which the radio reverts when entering Emergency call mode. Enter the zone numbers and the channel numbers in the table. Each MODAT personality will select one of these channels or may choose itself.

First, create the necessary personalities. Then go to the ZONE/CHANNEL ASSIGNMENT screen (**F4/F8**), and enter channel information. You will then be able to set the MODAT emergency channels.

**Note:** Emergency revert channels cannot be Receive Only channels.

## Auxiliary Systems

From the MAIN MENU, press **F4**, **F6**, and then **F7** to access this screen.

# D F G

MOTOROLA Radio Service Software ASTRO Model: MAIN:CHANGE/VIEW:CONV:AUX	Select Function F1 - F10.								
AUXILIARY SYSTEMS MENU -----									
F1 - HELP F2 - Singletone Systems F3 - Singletone List F4 - F5 - F6 - F7 - F8 - F9 - F10 - EXIT									
F1 HELP	F2 SINGLE SYSTEM	F3 SINGLE TONES	F4	F5	F6	F7	F8	F9	F10 EXIT

*This menu is available only if the RAC Software Option is Enabled. This menu permits access to advanced Conventional signalling features for the radio.*

## Function Key Descriptions

**F2 - SINGLE SYSTEM**  
(Singletone System)

Brings up the SINGLETONE SYSTEM screen. The Single Tone feature allows the capability to selectively access Repeaters. The Single Tone Systems defined from this screen can be specified in the CONV PERS RAC OPTIONS screen (**F4/F6/F3/F9/F7**) by setting the Repeater Access field to Enabled.

**F3 - SINGLE TONES**  
(Singletones List)

Brings up the SINGLETONE LIST screen where you can enter frequencies to be used in Singletone Repeater Access.

# Singleton Systems D F G B

From the MAIN MENU, press **F4**, **F6**, **F7** and then **F2** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CONV:AUX:SINGLESTONE SYSTEM	Enter or Scroll to Select System.								
System..... 1 SINGLESTONE SYSTEM ----- Tone Pretime (ms).....250 Tone Duration (ms).....500 PTT Sidetone.....Enabled RAB Sidetone.....Enabled									
F1 HELP	F2 ADD SYS	F3 PREV SYS	F4 NEXT SYS	F5 DELETE SYS	F6	F7	F8	F9	F10 EXIT

This screen allows you to configure the radio to work with various Singleton systems. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F2 - ADD SYS**

Adds a Singleton system.

**F3 - PREV SYS**

Accesses the previous Singleton system.

**F4 - NEXT SYS**

Accesses the next Singleton system.

**F5 - DELETE SYS**

Deletes the highlighted Singleton system. You will be prompted for confirmation before the system is actually deleted.

## Field Definitions

System	Use the UP/DOWN arrow keys to select the desired Singletone system, enter the system number directly, or use the <b>F3/F4</b> function keys to scroll through the available systems. <i>The radio may have a maximum of 16 systems.</i>
Tone Pretime (ms)	Use the UP/DOWN arrow keys to select (or directly enter) the desired value. The radio will stay in transmit mode for a period specified by the pre-time tone value before any encoding of the tone occurs. The valid range of values is 25 to 6375 ms in 25-ms increments.
Tone Duration (ms)	Use the UP/DOWN arrow keys to select or directly enter the desired value. Upon expiration of the Singletone Pretime period, the Singletone will be encoded onto the carrier for the duration of the value specified in this field. The valid range of values is 25 to 6375 ms in 25-ms increments.
PTT Sidetone	Use the UP/DOWN arrow keys to enable/disable this feature. If this feature is enabled, the radio will sound the sidetone during the Repeater Access sequence.  <b>Note:</b> This only applies to Singletone and DTMF Repeater Access operations.
RAB Sidetone	Use the UP/DOWN arrow keys to enable/disable this feature. If this field is set to Enabled, the radio will sound the sidetone during any Repeater Access sequence initiated via the Repeater Access Button (RAB).

# Singleton List D F G C

From the MAIN MENU, press **F4**, **F6**, **F7** and then **F3** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: ...CONV:AUX:SINGLESTONE LIST	Enter or Scroll to Select Frequency.								
<p>SINGLESTONE LIST</p> <pre> ----- #   Tone (Hz)           #   Tone (Hz) --  -----           --  ----- 1   300.0 </pre>									
F1 HELP	F2 ADD TONE	F3	F4	F5 DELETE TONE	F6	F7	F8	F9	F10 EXIT

This screen pertains to the Single Tone list. The list of Single Tone Frequencies entered here are the frequencies that will be available when the RAB 1 Code Type on the CONVENTIONAL PERSONALITY RAC OPTIONS screen (**F4/F6/F3/F9/F7**) is set to Single Tone.

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F2 - ADD TONE**

Adds a Single Tone tone (Hz).

**F5 - DELETE TONE**

Deletes the current Single Tone tone. You will be prompted for confirmation before the tone is actually deleted.

## Field Definitions

# (Number)

This is the index number of the available Single Tone tones. *This is a view-only field.*

Tone (Hz)

Use the UP/DOWN arrow keys to select the desired tone frequency or enter a value directly. The defined tones can be used on a personality-by-personality basis in the CONV PERS RAC OPTIONS screen (**F4/F6/F3/F9/F7**) by setting the Repeater Access field to Enabled. The field "Single Tone (Hz)" should contain a tone from this list. The valid range of values is 300 to 3000 Hz in 0.1-Hz increments.

# Conventional Message Alias List

## D F H

From the MAIN MENU, press **F4**, **F6**, and then **F8** to access this screen.

MOTOROLA Radio Service Software					Enter or Scroll to Select Value.				
ASTRO Model:									
Page 1 of 2									
..CHANGE/VIEW: CONV: MESSAGE ALIAS LIST									
CONV MESSAGE ALIAS LIST									
-----									
Entry	Message Alias Number				Message Alias Text				
-----									
1	1				MESSAGE 1				
2	2				MESSAGE 2				
3	3				MESSAGE 3				
4	4				MESSAGE 4				
5	5				MESSAGE 5				
6	6				MESSAGE 6				
7	7				MESSAGE 7				
8	8				MESSAGE 8				
-----									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	ADD			DELETE					EXIT
	MESSAGE			MESSAGE					

This screen contains the Conventional Message Alias List and is used to view and edit the Message Alias number and corresponding text. Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

F2 - ADD MESSAGE

Allows you to add a message to the list.

F5 - DELETE MESSAGE

Allows you to delete a message from the list. You will be prompted for confirmation before the message is actually deleted.

### Field Definitions

Entry

This is the system-assigned entry number. *This is a view-only field.*

Message Alias Number

The Message Alias Number corresponds to the message number that is transmitted over the air. It will match the message entry number in most cases. However, if the first entry in the list should cause the fourth message to be sent, then four should be assigned to the Message Alias Number of entry 1.

Message Alias Text

Enter the ASCII text for the message to be displayed when the corresponding message number is selected. *The size of the message will be display-dependent.*

## Conventional Status Alias List

# D F I

From the MAIN MENU, press **F4**, **F6** and then **F9** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: Page 1 of 2 ...CHANGE/VIEW:CONV:STATUS ALIAS LIST		Enter or Scroll to Select Value.																														
CONV STATUS ALIAS LIST ----- <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Entry</th> <th style="text-align: center;">Status Alias Number</th> <th style="text-align: center;">Status Alias Text</th> </tr> <tr> <th colspan="3" style="text-align: center;">-----</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td style="text-align: center;">1</td><td>STATUS 1</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">2</td><td>STATUS 2</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">3</td><td>STATUS 3</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">4</td><td>STATUS 4</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">5</td><td>STATUS 5</td></tr> <tr><td style="text-align: center;">6</td><td style="text-align: center;">6</td><td>STATUS 6</td></tr> <tr><td style="text-align: center;">7</td><td style="text-align: center;">7</td><td>STATUS 7</td></tr> <tr><td style="text-align: center;">8</td><td style="text-align: center;">8</td><td>STATUS 8</td></tr> </tbody> </table>			Entry	Status Alias Number	Status Alias Text	-----			1	1	STATUS 1	2	2	STATUS 2	3	3	STATUS 3	4	4	STATUS 4	5	5	STATUS 5	6	6	STATUS 6	7	7	STATUS 7	8	8	STATUS 8
Entry	Status Alias Number	Status Alias Text																														
-----																																
1	1	STATUS 1																														
2	2	STATUS 2																														
3	3	STATUS 3																														
4	4	STATUS 4																														
5	5	STATUS 5																														
6	6	STATUS 6																														
7	7	STATUS 7																														
8	8	STATUS 8																														
F1 HELP	F2 ADD STATUS	F3																														
F4	F5 DELETE STATUS	F6																														
F7	F8	F9																														
F10 EXIT																																

This screen contains the Conventional Status Alias List and is used to assign a number and name alias to a particular Status message. Press **Tab** to select the desired field, or press the desired function key (**F1** - **F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

## Function Key Descriptions

**F2** - ADD STATUS

Allows you to add a status alias to the list.

**F5** - DELETE STATUS

Allows you to delete a status alias from the list. You will be prompted for confirmation before the status alias is actually deleted.

## Field Definitions

Entry

This is the system-assigned entry number. *This is a view-only field.*

Status Alias Number

The Status Alias Number is the number that is transmitted over the air. It will match the status entry number in most cases. However, if the first entry in the list should cause the fourth status to be sent, then four should be assigned to the Status Alias Number of entry 1.

Status Alias Text

Enter the ASCII text for the message to be displayed when the corresponding status number is selected. *The size of the status will be display-dependent.*

# Zone/Talkgroup Assignment

## D H

At the MAIN MENU, press **F4** and then **F8** to access this screen.

MOTOROLA Radio Service Software ASTRO Model:		Enter or Scroll to Select Value.	
MAIN: CHANGE / VIEW: ZONE / CHAN			
Zone Number... 1 ZONE/TALKGROUP (CHANNEL) ASSIGNMENT -----			
Zone Name.....Z1			
Channel Number	Channel Name	Personality Type	Talkgroup Number
-----	-----	-----	-----
1	CENTRAL	Conv	1
2	RAMPART	Conv	2
3	SOUTHWEST	Conv	3
4	HOLLENBECK	Conv	4
5	HARBOR	Conv	5
6	HOLLYWOOD	Conv	6
7	WILSHIRE	Conv	7
8	WESTLA	Conv	8
F1	F2	F3	F4
F5	F6	F7	F8
F9	F10		
HELP	ADD	PREV	NEXT
	ZONE	ZONE	ZONE
		DELETE	DELETE
		ADD	DELETE
		CHAN	CHAN
			EXIT

A zone is an artificial grouping of channels (or talkgroups) to permit ease of operation. Generally, all members of a zone will reflect some common characteristic such as geographic location, job function, signalling type, etc.

Each member of a zone is defined by selecting a Conventional personality, or a Trunking personality and a talkgroup. *On radios equipped with a display, an optional name can also be assigned to each member of the zone.* Each zone can also be named. The number of characters allotted for the zone name versus the channel name is defined on the RADIO WIDE DISPLAY OPTIONS screen (**F4/F3/F6**). Zones and channels can be added and deleted using the **F2/F5** keys. Zone selection may be made via the rotary switch, the toggle switch or the keypad (if applicable).

Press **Tab** to select the desired field, or press the desired function key (**F1 - F10**). If a field is highlighted, use the UP/DOWN arrow keys to select the desired choice or value.

### Function Key Descriptions

- |                  |  |
|------------------|--|
| F2 - ADD ZONE    | Adds a zone.   |
| F3 - PREV ZONE   | Accesses the previous zone.  |
| F4 - NEXT ZONE   | Accesses the next zone.  |
| F5 - DELETE ZONE | Deletes a zone. You will be prompted for confirmation before the zone is actually deleted.       |
| F6 - ADD CHAN    | Adds a channel.  |
| F7 - DELETE CHAN | Deletes a channel. You will be prompted for confirmation before the channel is actually deleted. |

## Field Definitions

Zone Number	Use the UP/DOWN arrow keys to select the desired zone. The number may also be entered directly.
Zone Name	Each zone may be assigned an alphanumeric name. The number of characters allotted for the zone name versus the channel name is defined on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6). The zone name will appear to the left of the channel name on the radio display.
Channel Number	<i>This is a read-only field.</i> A channel number refers to the position in the list which a particular member occupies. Depending on the radio model and configuration, channel selection may be made via the rotary switch, the toggle switch, or the keypad (if applicable).
Channel Name	Each channel may be assigned an alphanumeric name. The number of characters allotted for the channel name versus the zone name is defined on the RADIO WIDE DISPLAY OPTIONS screen (F4/F3/F6). The channel name will appear to the right of the zone name on the radio display.
Personality Type	Use the UP/DOWN arrow keys to select either a Conventional or Trunked personality for each zone member. Both types may be assigned within a single zone.  <b>Note:</b> <i>Personalities must be defined before they can be assigned on this screen.</i> Trunking personalities are entered on the TRUNKING PERSONALITY screen (F4/F4/F4), and Conventional personalities are entered on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).
Personality Number	Use the UP/DOWN arrow keys to select the personality number for this channel. The number may also be entered directly.
Talkgroup Number	Use the UP/DOWN arrow keys to select the Trunking Talkgroup (or Subfleet) ID for the current channel in the list. The ID will be displayed in hexadecimal. Select ATG for Announcement Group, FLT for fleetwide., or DYN for a Dynamic Regrouping position.  <b>Note:</b> <i>Personalities must be defined before they can be assigned on this screen.</i> Trunking personalities are entered on the TRUNKING PERSONALITY screen (F4/F4/F4), and Conventional personalities are entered on the CONVENTIONAL PERSONALITY screen (F4/F6/F3).  <b>Note:</b> The Dynamic Regrouping must be enabled on the TRUNKING SYSTEM screen (F4/F4/F3); Announcement Group and Fleetwide features must be enabled on the TRUNKING PERSONALITY screen (F4/F4/F4) in order to be selected as a talkgroup.

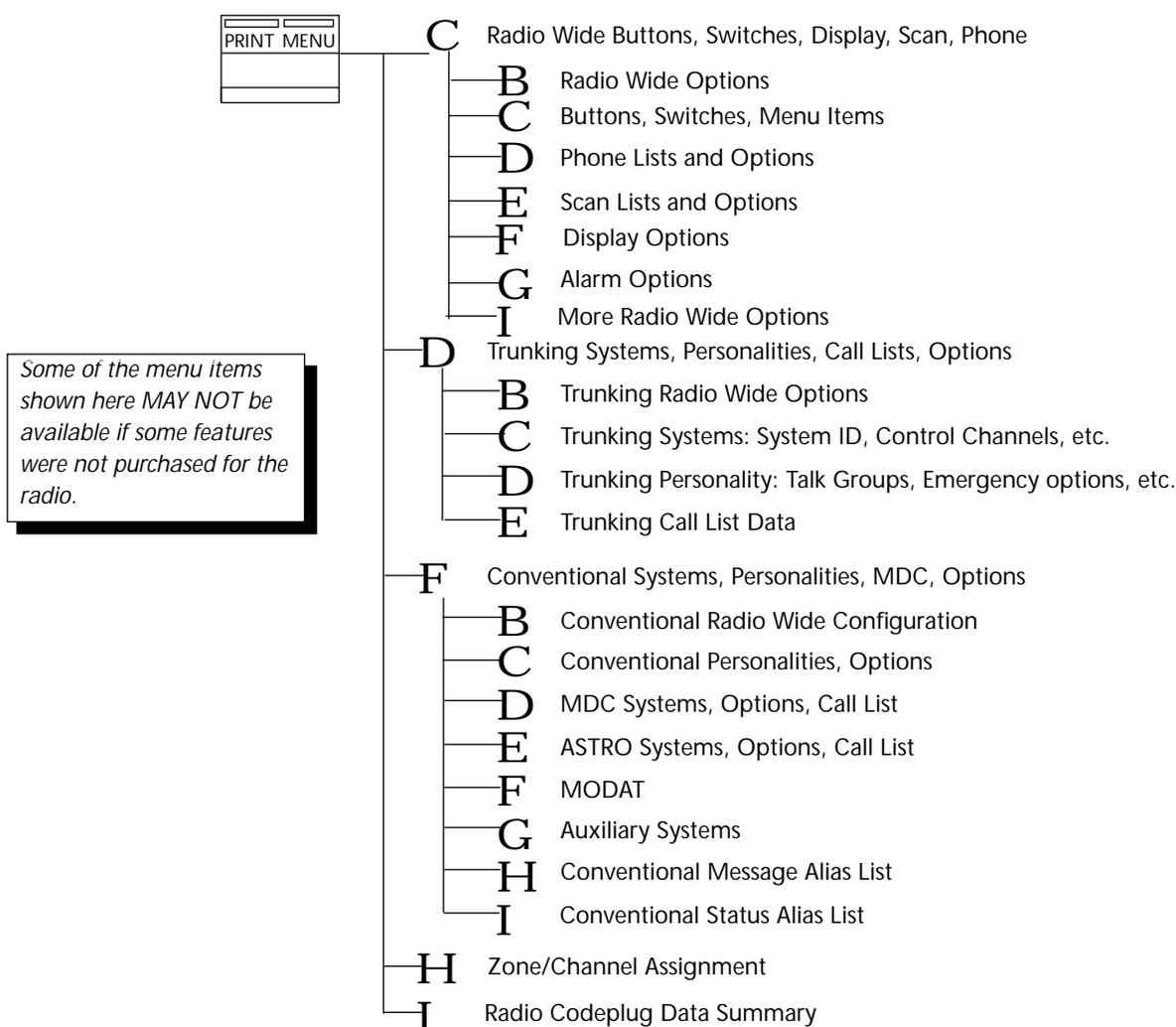
# Notes

# Print Menu Functions

The print function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required. *In order to print radio configuration data, you must first read or retrieve a codeplug file using the GET/SAVE MENU and related screens.*

Each print-out will contain the following data in addition to configuration information: radio model and serial number information, software version numbers, RSS version numbers, and the date and time of the print-out.

## Menu Map



## Print Menu

At the MAIN MENU, press **F5** to access the PRINT MENU.

# E

MOTOROLA Radio Service Software ASTRO Model:									
MAIN:PRINT									
PRINT MENU -----									
F1 - HELP									
F2 -									
F3 - Radio Wide Buttons, Switches, Display, Scan, Phone									
F4 - Trunking Systems, Personalities, Call Lists, Options									
F5 -									
F6 - Conventional Systems, Personalities, MDC, Options									
F7 -									
F8 - Zone/Channel Assignment									
F9 - Radio Codeplug Data Summary									
F10 - EXIT, Return to Main Menu									
F1 HELP	F2	F3 RADIO CONFIG	F4 TRUNK DATA	F5	F6 CONV DATA	F7	F8 ZONE/CHN ASSIGN	F9 DATA SUMMARY	F10 EXIT

*Make sure you have read a codeplug file using the GET/SAVE functions before you attempt to print configuration information.* The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly.* For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.

## Function Key Descriptions

**F3 - RADIO CONFIG**  
(Radio Configuration)

Brings up a screen from which you can print a summary of Radio Configuration information, including Button and Switch settings, Phone Lists, Scan Lists, and Display information.

**F4 - TRUNK DATA**  
(Trunking Data)

Brings up a screen from which you can print a summary of Trunking information including personalities, call lists, and options.

**F6 - CONV DATA**  
(Conventional Data)

Brings up a screen from which you can print out a summary of Conventional Personality and MDC system information.

**F8 - ZONE/CHANNEL ASSIGN**  
(Zone/Channel Assignment)

Prints out a summary of current Zone/Channel Assignment information for the radio.

**F9 - DATA SUMMARY** (Radio Codeplug Data Summary)

Prints a summary of key radio programming parameters.

## Radio Wide Configuration Print Menu

# E C

From the MAIN MENU, press **F5** and then **F3** to access the PRINT RADIO WIDE CONFIGURATION MENU.

MOTOROLA Radio Service Software ASTRO Model:	Select Function F1 - F10.								
MAIN:PRINT:CONFIG									
<p>RADIO WIDE CONFIGURATION PRINT MENU</p> <p>-----</p> <p>F1 - HELP  F2 - Radio Wide Options  F3 - Buttons, Switches, Menu Items  F4 - Phone Lists and Options  F5 - Scan Lists and Options  F6 - Display Options  F7 - Alarm Options  F8 -  F9 - More Options  F10 - EXIT, Return to PRINT MENU</p>									
F1 HELP	F2 RADIO OPTIONS	F3 FEATURE OPTIONS	F4 PHONE OPTIONS	F5 SCAN OPTIONS	F6 DISPLAY OPTIONS	F7 ALARM OPTIONS	F8	F9 MORE OPTIONS	F10 EXIT

*You must use the GET/SAVE functions to first read or get a codeplug for printing radio configuration data. The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.*

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly. For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.*

## Function Key Descriptions

F2 - RADIO OPTIONS	Prints a summary of Radio Wide options settings.
F3 - FEATURE OPTIONS	Brings up a menu from which you can print summaries of Button, Switch and Menu Item configurations respectively.
F4 - PHONE OPTIONS	Prints a summary of Phone option settings.
F5 - SCAN OPTIONS	Prints a summary of the Scan List and associated Scan option settings.
F6 - DISPLAY OPTIONS	Prints a summary of Display option settings.
F7 - ALARM OPTIONS	<i>This function is valid for Mobile radios only.</i> Prints a summary of Alarm option settings.
F9 - MORE OPTIONS	Prints a summary of other Radio Wide option settings.

# Radio Wide Features Configuration Print Menu

## E C C

From the MAIN MENU, press **F5** and then **F3** twice to access this screen.

MOTOROLA Radio Service Software ASTRO Model:	Select Function F1 - F10.								
MAIN:PRINT:CONFIG:FEATURES									
<p style="text-align: center;">RADIO WIDE FEATURES CONFIGURATION PRINT MENU -----</p> <p>F1 - HELP  F2 - Button Configuration  F3 - Switches Configuration  F4 - Menu Item List Configuration  F5 - DEK  F6 - Vip In  F7 - Vip Out  F8 -  F9 -  F10 - EXIT, Return to Radio Wide Configuration Menu</p>									
F1 HELP	F2 BUTTON CONFIG	F3 SWITCH CONFIG	F4 MENU ITEM	F5 DEK	F6 VIP IN	F7 VIP OUT	F8	F9	F10 EXIT

*You must use the GET/SAVE functions to first read or get a codeplug for printing radio configuration data. The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.*

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly. For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.*

### Function Key Descriptions

F2 - BUTTON CONFIG

Prints a summary of Button configuration settings.

F3 - SWITCH CONFIG

Prints a summary of Switch configuration settings.

F4 - MENU ITEM

Prints a summary of Menu Item configuration settings.

F5 -DEK

*This function is valid for Mobile radios only.* The DEK function prints the Direct Entry Keypad Programming information.

F6 -VIP IN

*This function is valid for Mobile radios only.* The Vip In function prints the Vehicle Interface Port Input programming information.

F7 -VIP OUT

*This function is valid for Mobile radios only.* The Vip Out function prints the Vehicle Interface Port Output programming information.

# Trunking Print Menu

## E D

At the MAIN MENU, press **F5** and then **F4** to bring up the TRUNKING PRINT MENU.

MOTOROLA Radio Service Software ASTRO Model:	Select Function F1 - F10.								
MAIN:PRINT:TRUNKING									
TRUNKING PRINT MENU ----- F1 - HELP F2 - Trunking Radio Wide Options F3 - Trunking Systems: System ID, Control Channels, etc. F4 - Trunking Personality: Talk Groups, Emergency options, etc. F5 - Trunking Call List Data F6 - F7 - F8 - F9 - F10 - EXIT, Return to PRINT MENU									
F1 HELP	F2 TRUNK WIDE OPT	F3 TRUNK SYS	F4 TRUNK PERS	F5 TRUNK ID LIST	F6	F7	F8	F9	F10 EXIT

*You must use the GET/SAVE functions to first read or get a codeplug for printing radio configuration data. The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to the instructions in the user's manual that came with your computer. Graphics capability is NOT required.*

Each print-out contains radio model and serial number information, software version numbers, Radio Service Software version numbers, and the date and time of the print-out.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly. For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.*

### Function Key Descriptions

- |                     |  |
|---------------------|--|
| F2 - TRUNK WIDE OPT | Prints information about options which are applicable to all Trunking operations, regardless of system type. |
| F3 - TRUNK SYS      | Prints Trunking system information.  |
| F4 - TRUNKING PERS  | Prints the Trunking personality and talkgroups.  |
| F5 - TRUNK ID LIST  | Prints the screen which documents the Trunking Call Lists.   |

## Conventional Print Menu

# E F

At the MAIN MENU, press **F5** and then **F6** to access the CONVENTIONAL PRINT MENU.

MOTOROLA Radio Service Software ASTRO Model: MAIN:PRINT:CONV	Select Function F1 - F10.								
<p>CONVENTIONAL PRINT MENU -----</p> <p>F1 - HELP F2 - Conventional Radio Wide Configuration F3 - Conventional Personalities, Options F4 - MDC Systems, Options F5 - ASTRO Systems, Options F6 - Modat F7 - Auxiliary Systems F8 - Conventional Message Alias List F9 - Conventional Status Alias List F10 - EXIT, Return to PRINT MENU</p>									
F1 HELP	F2 CONV WIDE OPT	F3 CONV PERS	F4 MDC CONFIG	F5 ASTRO CONFIG	F6 MODAT	F7 AUX SYSTEM	F8 MSG ALIAS	F9 STATUS ALIAS	F10 EXIT

*You must first read or get a codeplug using the GET/SAVE functions in order to print radio configuration data.* The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.

Each print-out contains radio model and serial number information, software version numbers, Radio Service Software version numbers, and the date and time of the print-out.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly.* For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.

## Function Key Descriptions

**F2 - CONV WIDE OPT**  
(Conventional Radio Wide Options)

Prints a summary of the Conventional Personality information.

**F3 - CONV PERS**  
(Conventional Personality)

Prints the Conventional Personality information.

**F4 - MDC CONFIG**

Brings up a screen from which you can print MDC System Configuration information.

**F5 - ASTRO SYSTEMS**

Brings up a screen from which you can print ASTRO system configuration information.

**F6 - MODAT**

Prints MODAT configuration information.

**F7 - AUX SYSTEMS**  
(Auxiliary Systems)

Takes you to a sub-menu from where you can print information about Single Tone Systems and Lists.

**F8 - MSG ALIAS**

Prints a summary of Message Alias configuration.

**F9 - STATUS ALIAS**

Prints a summary of Status Alias configuration.

MDC  
CONFIGURATION  
PRINT MENU  
**E F D**

At the MAIN MENU, press **F5**, **F6** then **F4** to access the MDC PRINT MENU.

MOTOROLA Radio Service Software ASTRO Model: MAIN:PRINT:CONV:MDC	Select Function F1 - F10.								
MDC CONFIGURATION PRINT MENU ----- F1 - HELP F2 - F3 - MDC Systems F4 - MDC Call List Data F5 - MDC Repeater ID List F6 - F7 - F8 - F9 - F10 - EXIT, Return to PRINT MENU									
F1 HELP	F2	F3 SYSTEM DATA	F4 CALL LIST	F5 REPEATER ID LIST	F6	F7	F8	F9	F10 EXIT

*You must first read or get a codeplug using the GET/SAVE functions in order to print radio configuration data. The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.*

Each print-out contains radio model and serial number information, software version numbers, Radio Service Software version numbers, and the date and time of the print-out.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly. For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.*

Function Key Descriptions

F3 - SYSTEM DATA

Print MDC Systems information.

F4 - CALL LIST

Prints a summary of the MDC Call List.

F5 - REPEATER ID LIST

Prints a summary of the MDC Repeater Access Codes.

# ASTRO Print Menu

## E F E

At the MAIN MENU, press **F5**, **F6** and then **F5** to access the ASTRO PRINT MENU.

MOTOROLA Radio Service Software ASTRO Model: MAIN:PRINT:CONV:ASTRO	Select Function F1 - F10.								
<p>ASTRO CONFIGURATION PRINT MENU -----</p> <p>F1 - HELP F2 - ASTRO Radio Wide Configuration F3 - ASTRO Systems F4 - ASTRO Call List Data F5 - ASTRO Data Peripheral F6 - ASTRO Conventional Talkgroups F7 - F8 - F9 - F10 - EXIT</p>									
F1 HELP	F2 ASTRO OPTIONS	F3 ASTRO SYSTEMS	F4 CALL LIST	F5 DATA PERIPH	F6 TLK GP LIST	F7	F8	F9	F10 EXIT

*You must first read or get a codeplug using the GET/SAVE functions in order to print radio configuration data.* The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.

Each print-out contains radio model and serial number information, software version numbers, Radio Service Software version numbers, and the date and time of the print-out.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly.* For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.

### Function Key Descriptions

- |                      |  |
|----------------------|--|
| F2 - ASTRO OPTIONS   | Prints a summary of ASTRO Radio wide configuration.              |
| F3 - ASTRO SYSTEMS   | Prints ASTRO systems information.                                |
| F4 - CALL LIST       | Prints a summary of the ASTRO Call List.                         |
| F5 - DATA PERIPHERAL | Prints a summary of the RS232 Packet Data Interface parameters.  |
| F6 - TLK GP LIST     | Prints a summary of the ASTRO Conventional Talkgroup parameters. |

## Auxiliary Systems Print Menu

# E F G

At the MAIN MENU, press **F5**, **F6** and then **F7** to access this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:PRINT:CONV:AUX	Select Function F1 - F10.								
AUXILIARY SYSTEMS PRINT MENU -----									
F1 - HELP F2 - Singleton Systems F3 - Singleton List F4 - F5 - F6 - F7 - F8 - F9 - F10 - EXIT									
F1 HELP	F2 SINGLE SYSTEM	F3 SINGLE TONES	F4	F5	F6	F7	F8	F9	F10 EXIT

*This screen is accessible only if RAC Option has been added.*

*You must first read or get a codeplug using the GET/SAVE functions in order to print radio configuration data. The PRINT function is used to produce permanent records of codeplug configurations. A printer is required and should be connected to your computer according to instructions in the user's manual that came with your computer. Graphics capability is NOT required.*

Each print-out contains radio model and serial number information, software version numbers, Radio Service Software version numbers, and the date and time of the print-out.

**Note:** *When printing, misalignment of page breaks may result if the printer is not set up properly. For best results, configure the printer as an IBM ProPrinter or an Epson FX/MX having factory default settings. The default number of lines per page is 66.*

## Function Key Descriptions

**F2 - SINGLE SYSTEM**  
(Singleton Systems)

Prints a summary of Singleton Systems information.

**F3 - SINGLE TONES**  
(Singleton List)

Prints the Singleton List.

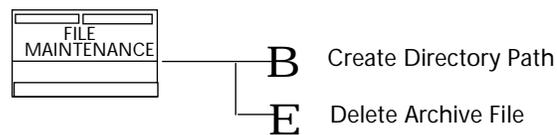
# File Maintenance Menu Functions

7

This RSS feature allows you to do file management tasks from within the RSS. For instance, you can create directories and delete files without exiting the RSS. This section describes all the functions available from the FILE MAINTENANCE MENU. To guide you through these functions, related menus and screens are shown with their paths from the MAIN MENU, function key descriptions and field definitions.

---

## Menu Map



## File Maintenance Menu

# F

At the MAIN MENU, press **F6** to access the FILE MAINTENANCE MENU.

MOTOROLA Radio Service Software ASTRO Model: MAIN:FILE MAINT	Select Function F1 - F10.								
FILE MAINTENANCE MENU -----									
F1 - HELP F2 - Create Directory Path F3 - F4 - F5 - Delete Archive File F6 - F7 - F8 - F9 - F10 - Exit									
F1 HELP	F2 DEFINE PATH	F3	F4	F5 DELETE FILE	F6	F7	F8	F9	F10 EXIT

This RSS feature allows you to perform file management tasks from within the Radio Service Software package. For instance, you can create directories and delete files without exiting the RSS.

## Function Key Descriptions

### F2 - DEFINE PATH

Brings up a screen where you can create a new directory from within the RSS.

### F5 - DELETE FILE

Brings up a screen where you can delete a file from within the RSS. This feature is similar to the DEL file name command in DOS.

## Create Directory Path

# F B

From the MAIN MENU, press **F6** and then **F2** to bring up this screen.

MOTOROLA Radio Service Software ASTRO Model: MAIN:FILE MAINT:CREATE	Enter Path.								
CREATE DIRECTORY PATH ----- New Path Name : C:\MRSS\ASTRO\tmp									
F1 HELP	F2 DEFINE PATH	F3	F4	F5	F6	F7	F8	F9	F10 EXIT

This screen allows you to create a new directory on your computer disk drive. This is similar to the MKDIR command in DOS.

### Programming Procedure

1. Type in the new directory path name, or press the desired function key (**F1 - F10**).
2. If you entered a new directory path, press **F2** to create the directory.

### Function Key Description

#### F2 - DEFINE PATH

Creates a directory with the path name specified in the New Path Name field.

## Delete Archive File

From the MAIN MENU, press **F6** and then **F5** to bring up this screen.

# F E

MOTOROLA Radio Service Software ASTRO Model:	Enter Path.								
MAIN:FILE MAINT:DELETE ARCHIVE									
Current Archive C:\MRSS\ASTRO\ARCHIVEM									
DELETE ARCHIVE FILE -----									
FileName	FileName	FileName	FileName						
-----	-----	-----	-----						
mobcw3.arc									
mobtw5.arc									
mobtw7.arc									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
HELP	CHANGE			DELETE					EXIT
	ARCHIVE			FILE					

This screen allows you to delete unwanted files.

## Programming Procedure

1. Enter the path of the directory which holds the unwanted files by typing the path name in the Current Archive field.
2. Press **Tab** or **Enter** to select the desired file name.
3. Press **F5** to delete the selected file. You will be prompted for confirmation before the file is actually deleted.

## Function Key Descriptions

### F2 - CHANGE ARCHIVE

Allows you to access a directory other than the current directory. This function is similar to the CHDIR command in DOS.

### F5 - DELETE FILE

Allows you to delete a file from the path. This function is similar to the DEL command in DOS. You will be prompted for confirmation before the file is actually deleted.

## Field Definitions

### Current Archive

The full path name for the currently selected archive file will appear in this field. The default archive path will always be the specified default path from the CONFIGURE PATHS AND PORT screen (**F9/F3**).

### FileName

This field holds the name of the file that you wish to delete.

**Note:** Refer to the owner's manual that came with your computer for a complete description of file names.

# FLASHport™ Upgrade

8

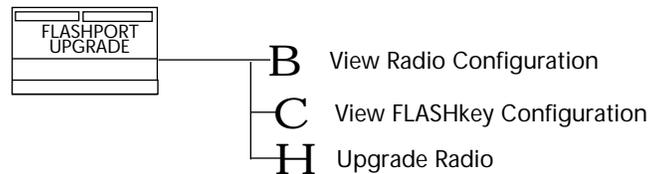
FLASHport is a revolutionary new method of upgrading the software in a subscriber radio. It involves enabling downloading new features to the radio or FLASHing new software into the radio.

This section is a brief preview of FLASHport capabilities. Detailed procedures can be found in the FLASHport User's Manual that accompanies the FLASHport software upgrade kit.

**Note:** *Your screens may vary slightly from the screens shown in this section.* The FLASHport path and key titles (HELP, EXIT, FLASH RADIO, etc.) may be the same for portable and mobile radios, but the function keys may be different.

---

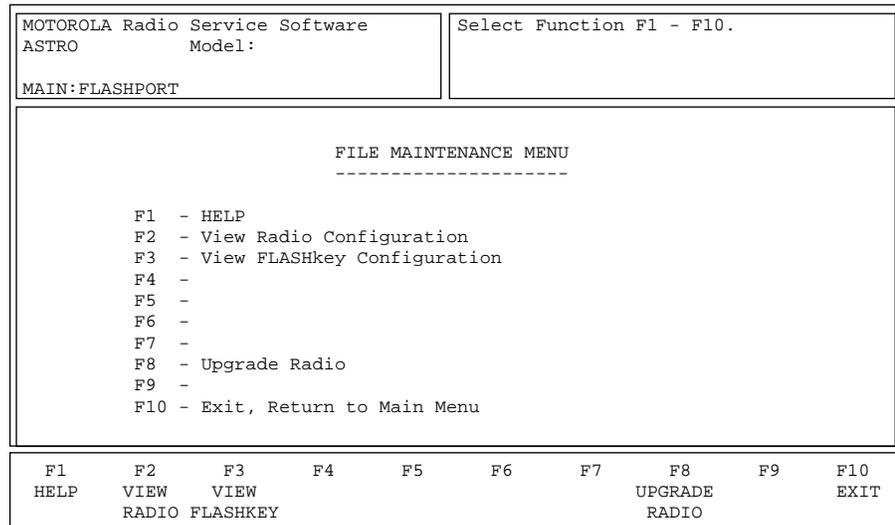
## Menu Map



# FLASHport Upgrade

## H

At the MAIN MENU, press **F8** to access the FLASHport UPGRADE MENU.



**Note: This manual does NOT discuss the FLASHport process and related RSS screens in detail. Please consult your FLASHport User's Guide for in-depth help information.**

This is a menu that is used to view the radio's configuration, to view the FLASHkey's contents, to upgrade the codeplug, and to FLASH the radio. The HELP screen (**F1**) and the User's Manual that came with your FLASHport Upgrade package will guide you through the upgrade process.

**Note: After upgrading the radio, you must reset it by turning the radio off and then back on again.**

## Function Key Descriptions

### F2 - VIEW RADIO

Displays the radio's current system and enhancements prior to the FLASHport upgrade. *You must have specified the displayed information when you order a FLASHport upgrade package from the subscriber.* Since the FLASHport upgrade involves downloading new software to the radio, the memory size of the radio's controller board will also be displayed in order to reveal possible memory limitations in FLASHing the radio.

### F3 - VIEW FLASHKEY

Displays the contents of the FLASHkey you will receive with your FLASHport upgrade package. This screen displays the FLASH software required, number of purchased and remaining upgrades, and a side-by-side comparison of the features currently enabled in the radio and the features that will be enabled when the radio is FLASHed.

### F8 - UPGRADE RADIO

Brings up the screen which displays the names of the files in the default directory for the FLASH software. You will be asked to select a FLASH software file. When this is done, press **F8** to start the upgrade process.

# Computer-to-Radio Communication Error Codes

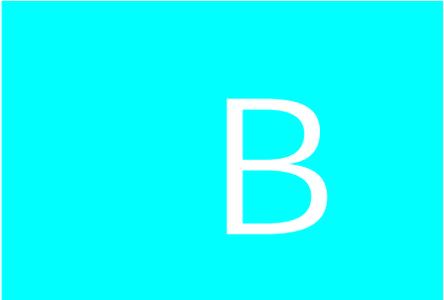


Error Code	Description	Recommended Corrective Action
01	No response from the radio	Check programming cable connections. Eliminate background routines on the PC. Check power to the RIB.
02	Transmit register time-out	Check serial port.
03	Busy low time-out	Check to make sure that the radio is turned on. Check radio's battery. Check COM port selection on the CONFIGURE PATHS AND PORT screen ( <b>F9/F3</b> ).
04	Communication collision	Retry operation. Check COM port selection on the CONFIGURE PATHS AND PORT screen ( <b>F9/F3</b> ). Check power to the RIB. Check programming cable connections.
05	Programmer not receiving its own transmission	Check COM port selection on the CONFIGURE PATHS AND PORT screen ( <b>F9/F3</b> ). Check RIB-to-PC cable. Check power to the RIB. Check serial card. Eliminate background routines on the PC.
06	Re-transmission not acknowledged (NAKed)	Retry operation.
07	CRC error	Retry operation.
08	CRC error	Retry operation.
09	No Acknowledgment received	Check radio's battery. Check power to the RIB.
11	Busy high after pulled low	Check COM port selection on the CONFIGURE PATHS AND PORT screen ( <b>F9/F3</b> ). Check COM port. Check RIB-to-PC connections. Check power to the RIB.

**Note:** A low-level hum or buzz in the received audio MAY be experienced when TPL code OZ (254.1 Hz) is used. This PL code is at the high end of the sub-audible frequency range and may be heard in the audio under certain circumstances. *Use of this code should be avoided if possible.*

## Notes

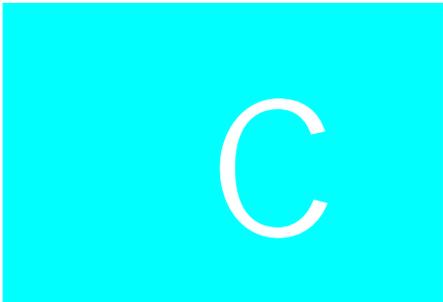
# TPL Frequencies and Codes



Frequency (Hz)	Code	Frequency (Hz)	Code
067.0	XZ	136.5	4Z
069.3	WZ	141.3	4A
071.9	XA	146.2	4B
074.4	WA	151.4	5Z
077.0	XB	156.7	5A
079.7	WB	162.2	5B
082.5	YZ	167.9	6Z
085.4	YA	173.8	6A
088.5	YB	179.9	6B
091.5	ZZ	186.2	7Z
094.8	ZA	192.8	7A
097.4	ZB	203.5	M1
100.0	1Z	206.5	8Z
103.5	1A	210.7	M2
107.2	1B	218.1	M3
110.9	2Z	225.7	M4
114.8	2A	229.1	9Z
118.8	2B	233.6	M5
123.0	3Z	241.8	M6
127.3	3A	250.3	M7
131.8	3B	254.1	OZ

## Notes

# DPL Codes



Code	Code	Code	Code
023	152	331	546
025	155	343	565
026	156	346	606
031	162	351	612
032	165	364	624
043	172	365	627
047	174	371	631
051	205	411	632
054	223	412	645
065	226	413	654
071	243	423	662
072	244	431	664
073	245	432	703
074	251	445	712
114	261	464	723
115	263	465	731
116	265	466	732
125	271	503	734
131	306	506	743
132	311	516	754
134	311	525	
143	315	532	

## Notes

# ASTRO Features



## *Conventional Signalling System Features*

Features	MDC-1200	DTMF	DTMF/ Phone
Data-Operated Squelch	✓		
Radio Check	✓		
PTT-ID	Encode		
Emergency Alarm	Encode		
Voice Selective Call	Decode		
Emergency Revert	✓		
Memory Dial (19 Numbers)			✓
Last Number Dial			✓
19 Access/De-Access Codes			✓
Call Alert	Decode		
Hot Keypad		✓	
Mandown	✓		
Immediate/Delayed Access			✓
Live/Buffered Dialing			✓

**Note:** Access to many of these features will be model-dependent.

*Trunking Signalling System Features*

Features	Type I	Type II
Universal ID	✓	
Failsoft	✓	✓
PTT-ID	✓	✓
Emergency Alarm Call		✓
Private Call	Encode/Decode	Encode/Decode
Call Alert	Encode/Decode	Encode/Decode
Phone Interconnect	Encode/Decode	Encode/Decode
Hot Keypad	✓	✓
Status/Message		Encode
Talkgroup Scan	✓	✓
Priority Monitor		✓
Subfleet Scan	✓	
Mandown		✓
Affiliation		✓
Dynamic Regrouping		✓
Radio Inhibit		✓
AMSS	✓	✓
SmartZone		✓
Group Privacy	✓	✓

**Note:** Access to many of these features will be model dependent.

*Radio Wide Features*

Features	Type I	Type II
Selectable Keypad Mute	✓	✓
Alert Tones	✓	✓
Block Pending CA/PC		✓
Codeplug Self Test	✓	✓
Rotary Switch Function in Scan Programming	✓	✓
Low Battery Parameters	✓	✓
Short/Long Keypress Duration	✓	✓
Time-Out Timer Values	✓	✓
Emergency Silent Alarm	✓	✓
Emergency Channel Delay	✓	✓
Button Functions	✓	✓
Switch Functions	✓	✓
Menu Item List Functions <i>(Portables Only)</i>	✓	✓
Radio Lock	✓	✓
Display Scrolling and Name Size Option	✓	✓
Display Backlight	✓	✓
Scan List Creation	✓	✓
Alarm Option <i>(Mobiles Only)</i>	✓	✓

*Trunking Wide Features*

Features	Conventional	Trunking
Telephone Interconnect Half/Full Duplex		✓
Auto Dial Holdoff		✓

*Conventional Wide Features*

Features	Conventional	Trunking
Monitor Type	✓	
Monitor/Latch Parameters	✓	
Smart PTT Parameters	✓	
Hub Defects PL	✓	

*By-Personality Features*

Features	Conventional	Trunking
Mode Name (Assigned on Zone/ Channel screen)	✓	✓
RX Frequency	✓	
TX Frequency	✓	
RX Squelch Type	✓	
RX Squelch Code	✓	
TX Squelch Type	✓	
TX Squelch Code	✓	
Talkaround/Direct	✓	
Smart PTT	✓	
Choose Scan List	✓	✓
Hot Keypad	✓	✓
TX Power Level ( <i>For Applicable Bands</i> )	✓	✓
MDC Signaling System	✓	
TX Deviation	✓	
Phone Operation (DTMF Timing Parameters)	✓	✓
Auto Scan	✓	✓
Mute/Unmute Options	✓	
Choose Time-Out Timer Value	✓	✓
Squelch Fine Tune	✓	
Channel Spacing	✓	
Pre/De-emphasis	✓	
Trunking System		✓
Trunking Individual ID		✓
Failsoft Type		✓
Talk Permit Tone		✓
Call Alert		✓
Private Call		✓
Conversation Type (Message, Transmission, PTT-ID)		✓
Talkgroups		✓
Status		✓

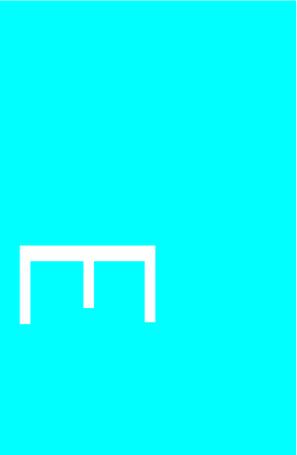
*By-Personality Features*

Features	Conventional	Trunking
Message		✓
Access Type (Fast/Slow)		✓
20-Channel Synthesized		✓
Emergency Parameters		✓
ASTRO Signalling System	✓	
MODAT Signalling System	✓	

*By-System Features*

Features	Conventional ASTRO	Conventional MDC	Type I Trunking	Type II Trunking
System ID			✓	✓
System Type (I, II, III)			✓	✓
System ID Aliasing				✓
Individual ID	✓	✓	✓	✓
Universal ID			✓	
Talkgroup ID	✓	✓		
Connect Tone		✓	✓	
Coverage Type		✓	✓	
Affiliation Type				✓
TX Power			✓	✓
Repeater Offset			✓	✓
Channel Assignment Type (International/Domestic)			✓	✓
Splinter Channel			✓	✓
Phone DTMF Timing			✓	✓
Hot Keypad DTMF Timing			✓	✓
Status/Message Aliasing			✓	
PTT-ID Enable		✓		
Sidetone Enable		✓		
Radio Check Enable	✓	✓		
Emergency Type, Parameters	✓	✓		
Emergency Revert, Table Definition	✓	✓		
MDC Timing Parameters		✓		
DOS Parameters		✓		
Sel Call Reset Parameters	✓			
ASTRO Parameters	✓			

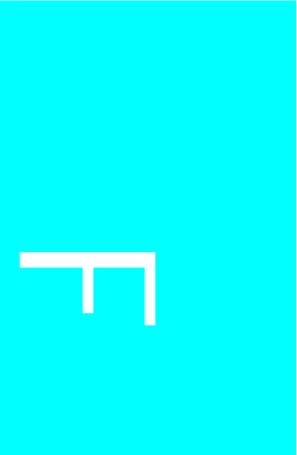
## Notes



# Trunked Radio Personality Chart

Feature Name	Pers 1	Pers 2	Pers 3	Pers 4	Pers 5	Pers 6	Pers 7	Pers 8	Pers 9	Pers 10	Pers 11	Pers 12	Pers 13	Pers 14	Pers 15
System Type															
System ID															
Individual ID															
Coverage Type															
Affiliation Type															
Control Channel 1															
Control Channel 2															
Talkgroups 1															
Talkgroups 2															
TG Strapping															
Zone															
Scan List															
Scan Type															
Interconnect															
Phone Display Format															
Private Call															
Private Call Type															
Private Call Operation															

## Notes

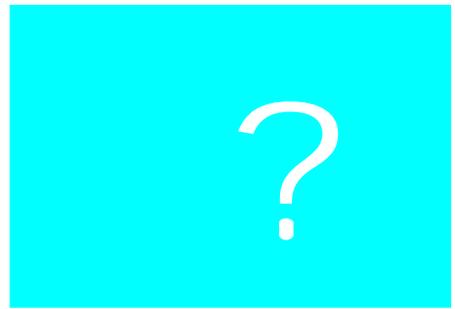


# Conventional Radio Personality Chart

Feature Name	Mode 1 #_____	Mode 2 #_____	Mode 3 #_____	Mode 4 #_____	Mode 5 #_____	Mode 6 #_____	Mode 7 #_____	Mode 8 #_____	Mode 9 #_____	Mode 10 #_____	Mode 11 #_____	Mode 12 #_____	Mode 13 #_____	Mode 14 #_____	Mode 15 #_____
Tx Frequency															
Tx PL/DPL Code															
Rx Frequency															
Rx PL/DPL Code															
Time-Out Timer															
Scan List															
Phone															
Smart PTT															
Tx Power															
Zone															
Channel															
Name															
Rx Signal Voice Type															
Network Access Code															

## Notes

# Glossary



AMSS	Automatic Multiple Site Select. A feature that enables radios to operate beyond the reach of a single repeater site. Radios equipped with this feature may be able to operate over large geographic locations.
ANI	Automatic Number Identification. Used to number access/release codes that are frequently used for system management and billing purposes. ANI numbers can be programmed by the RSS and cannot be changed in the field.
ASCII	American Standard Code for Information Interchange. A seven-bit code that defines 128 standard characters, including control characters, letters, numbers and symbols.
Active Channel	A channel in which the radio is currently receiving or transmitting a signal.
Adjustment	A means of tuning radio parameters to their correct values.
Alignment	A means of adjusting or tuning radio components to obtain optimum operating performance.
Announcement Group	Grouping structure used in a Type II or Type III Trunking system. A large group of radio users who, under normal circumstances, communicate to coordinate actions amongst themselves.
Antenna Connector	The mini UHF RF coax connector located on the rear or top of the radio that is used to connect the antenna to the radio.
Archive File	A computer file that contains the personality data of a radio. Radio codeplug information can be retrieved from the radio and stored in a file using Motorola Radio Service Software (RSS). It is standard practice to name archive files according to their corresponding radio serial numbers.
Archive File Cloning	The process of merging data from two different radio codeplugs so that many radios can be programmed with the resulting personality data. In the case of archive file cloning, the source of the factory data is an archive file and the source of the tuning data is the target radio.
Asynchronous Communication	A method of data communication in which information is transmitted one communication character at a time. Each character is preceded by a start bit and followed by one or more stop bits.
Audible Status Tones	A variety of tones used to indicate the status of the radio or system. Examples are busy, call back, talk prohibit, talk permit and Failsoft tones.

Auto-Affiliation	The ability of radios in a Type II or Type III Trunking system to automatically transmit their talkgroup and unit ID information to the Central Controller. Affiliation occurs after the radio has locked on to the control channel frequency. It does not require that the user of the radio press PTT.
Automatic Multiple Site Select	See "AMSS".
Automatic Retry	The ability of a Portable radio to send up to 16 in-bound signalling words in a four-second period provided that the out-bound signalling word is not received from the Central Controller <i>after</i> the radio has made a request to transmit.
BCL	See "Busy Channel Lockout".
bps	Bits per second. Unit of measurement representing bit rate (the number of binary bits transmitted per unit time).
BSI	See "Base Station Identifier".
Back-up File	A duplicate or copy of an archive file that can be used in the event that the original archive file is lost, damaged or erased accidentally.
Base Station Identifier (BSI)	An identifier which is programmed into the Central Controller and sent out in Morse code ID on the lowest frequency Trunked repeater.
Blank Frequency	A channel that is not assigned a transmit frequency.
Blank PL Code	A channel that is not assigned a receive or transmit PL code.
Busy Channel Lockout (BCL)	A feature on Conventional modes that gives "listening privacy". The radio will not key when there is a carrier on a channel unless it is the user's PL/DPL group. Instead, the user will hear a busy tone while PTT is pressed. In addition, the user will not be allowed to monitor the channel. If all the users who share the channel have BCL enabled on their radios, they will have privacy similar to that provided by a Trunked radio system.
Busy Override	A feature that allows messages to get through to critical users (or users at critical sites) even when some sites may have busy channels. Those at available sites are also included in the communication. Others join the conversation as frequencies at their sites become available.
CA	See "Call Alert".
CAI Digital Operation	A radio that is equipped with CAI (Common Air Interface) Digital Operation uses the IMBE (Improved Multi-Band Excitation) digital signalling protocol to encode and decode digital signals.
CSQ	See "Carrier Squelch".
Calibration	A means of teaching the radio to adjust itself for optimum performance.
Call Alert (CA)	A Stat-Alert or RapidCall signalling feature that acts as a paging system within the radio's communication network. A Call Alert is sent with a series of audible signals and/or a flashing display (depending on the radio product and model) to notify an individual radio or an entire

group of radios of an incoming call. Channel Scan will not take place until the Call Alert or Voice Sel Call is cleared. Since Call Alert signals are acknowledged, dispatchers can verify whether targeted radios have received their signals.

Call Alert Decode	A series of tones sounded to alert the user to an incoming page.
Call Light	A visual indicator that flashes when a Call Alert or Voice SelCall is received.
Call List	A list of IDs from one or more signalling formats that is used to send a message simultaneously to individuals or a group.
Carrier	A term that represents any channel activity.
Carrier Squelch (CSQ)	<p>The mode that a radio is in if the loudspeaker is unmuted when a transmitted signal is detected by the radio.</p> <p>A radio receive mode of operation that uses receiver squelch as the only method of muting the speaker.</p> <p>A transmit or receive squelch code selection that enables the radio to transmit or receive audio with no sub-audible data message.</p>
Channel	A single path, separated by frequency or time divisions, for transmitting electrical signals. A receive (one-way) or receive-and-transmit (two-way) frequency path. May also be referred to as "Mode" or "Zone".
Clear Mode Alert Tones	In coded radio transmission, these tones are designed to warn the user the message being transmitted is unprotected.
Cloning	A Radio Service Software (RSS) function which allows quick duplication programming of a radio's codeplug data to many radios. Electronic tuning/alignment information is the only data not copied.
Cloning Cable	A radio-to-radio connector cable used to program one radio's personality into another.
Codeplug	The contents of the radio's EEPROM that stores the radio's personality information including configuration and calibration data. The radio's personality consists of system ID, Unit ID and Fleet/Subfleet/Talkgroup information, as well as the control channel information. The codeplug contains all the features and options stored in the codeplug.
COMport	The logical name of the serial port available on personal computers. These ports are referred to as COM1, COM2, COM3 or COM4 respectively.
Communications Port	See "COMport".
Connect Tone	A tone generated by the radio over the voice channel to the Trunked Repeater. Connect tone is used as a signal to the Central Controller that a specific voice channel has been assigned. There are eight different connect tones available: 76.60 Hz, 83.72 Hz, 90.00 Hz, 105.88 Hz, 116.13 Hz, 128.57 Hz and 138.46 Hz.

Continuous Assignment Updating	The ability of the Motorola Trunked system to ensure that a radio just coming into service will be sent to the appropriate voice channel to join the rest of the Fleet, Subfleet or Talkgroup. Once a group has been assigned a voice channel, the control channel will continue to transmit the voice channel information for that call for the duration of the call.
Control Channel	One of the four highest frequencies in a Trunking system that is used to provide a continuous two-way communications path between Central Controller and all radios on the system.
Crystal Aging	The natural process by which the resonant frequency of a crystal changes with time.
DES Encryption	A method of encryption that contains $7.2 \times 10^{16}$ encryption keys. It was originally developed for the US Federal Government and is used to protect the security of confidential radio communications.
DES-XL Encryption	A method of encryption that contains $7.2 \times 10^{16}$ encryption keys. It was originally developed for the US Federal Government and is used to protect the security of confidential radio communications.
DOS	Computer's disk operating system. Also see "Data Operated Squelch".
DPL	Digital Private-Line™ Coded Squelch. A continuous sub-audible data signal that is transmitted along with a carrier. A radio that has DPL on the receive frequency will require both the presence of carrier and the correct DPL code before it will unmute. In addition, if the radio has DPL on the transmit frequency, the DPL code will be continuously relayed during transmissions made on that channel.
DTMF	Acronym for Dual-Tone Multiple Frequency signaling format, widely used in the telephone industry. Two tones are transmitted simultaneously at different amplitudes for each keypad key pressed. A sequential series on Dual Tone makes a data word.
DVI-XL Encryption	A method of encryption that contains $1.8 \times 10^{19}$ encryption keys. It features a Motorola-proprietary algorithm and is used to protect the security of confidential radio communications.
DVP	See "Digital Voice Protection".
DVP Encryption	A method of encryption that contains $2.36 \times 10^{21}$ encryption keys. It features a Motorola-proprietary algorithm and is used to protect the security of confidential radio communications.
DVP-XL Encryption	A method of encryption that contains $7.9 \times 10^{28}$ encryption keys. It features a Motorola-proprietary algorithm and is used to protect the security of confidential radio communications.
Data	Numerical information which tells the radio what to do.
Data Operated Squelch (DOS)	A fast attack MDC-1200 detector. If enabled, DOS will detect an incoming packet of the same signalling scheme as the radio and squelch the audio (i.e., mute the audio path) for the duration of the packet. A small blip of data will be heard but most of the packet will not be heard.

Default	Standard radio settings. Also refers to standard settings that the RSS uses for input/output (I/O) port locations, file locations, display settings and other field values. The value a field will automatically contain if a user does not change it
Default Drive	The disk or diskette drive that the RSS will use to get or save data or files. You can change the default drive from the SERVICE SOFTWARE CONFIGURATION MENU (F9).
De-key	Turning the radio transmitter to the off position.
Deviation	The measure of the amount of modulation applied to a transmitter signal.
Digital Private-Line	See "DPL".
Digital Voice Protection (DVP)	One of several encryption algorithms used to protect the security of confidential radio communications.
Disk Drives	Magnetic media that the computer uses to store files.
Display	The CRT terminal that the computer displays information on. Also, the LED or LCD indicators on the radio. (See LED or LCD.)
Dual Mode Operation	The ability of a radio to operate in both conventional and Trunked modes.
Dual-Tone Multiple Frequency	See "DTMF".
Dynamic Regrouping	A feature which allows a dispatcher to reassign talkgroup units without any action on the part of the radio users. The dispatcher may move selected units into other talkgroups, create new or special talkgroups consisting of selected units, and merge separate talkgroups into a single talkgroup.
EEPROM	Electronically-Erasable Read-Only Memory. Used by the radio microcomputer system to store the radio's codeplug data (personality).
EXTAL	Crystal oscillator clock line. Provides the 3.888MHz input to the microcomputer.
Emergency Alarm	This feature allows the user to notify the dispatcher of a crisis situation by simply pressing a button on the radio or flipping a hidden switch inside his or her vehicle. An alarm is immediately sent to the dispatcher along with the Unit ID so that assistance can be provided. This transmission will continue until the dispatcher acknowledges the emergency.
Encoder Features	Features relating to the transmit (or encode) portion of a signalling system(s).
External Alarm	A feature designed to let the dispatcher of emergency situations. When External Alarm is activated and a Call Alert is received, a pin on the accessory connector will have voltage on it for 7 seconds. This voltage can be used to activate a relay which can turn on the horn or lights.

Failsoft (F/S)	A pre-assigned channel. In the event that the Central Controller should fail, the radios in the system will enter a “Conventional” Failsoft channel. Each Trunked repeater in the system will key and transmit a data word informing every radio in the system that the system has gone into the Failsoft mode and communication will act as a Conventional radio repeater.
Field Choices	A set of direct-entry values (or values that can be scrolled) from which the user may select to populate a field (feature) on an RSS screen.
FLASHport™	A Motorola-proprietary technology that makes it possible to load new operating software onto radios equipped with the Flash EEPROM Memory Chip. Features and enhancements can thus be added based on changing user needs.
Fleet	A grouping structure used in Type I Trunking. A fleet is a group of radio users with a common functional responsibility who, under normal circumstances, coordinate actions among themselves.
Fleet Call	A type of call that can be directed simultaneously to all radios in the fleet.
Fleet Mapping	The process of identifying who needs to talk to whom and how individual radio users should be grouped. The fleet map also addresses expansion needs, that is, how many radios can be added to the system in future.
Firmware	Software or a software/hardware combination of computer programs and data, with a fixed logic configuration stored in a read-only memory. Information cannot be altered or reprogrammed.
Frequency	The location of the center of a channel of operation in the radio spectrum (typically measured in MHz).
Function Keys	The ten (or twelve) keys located on the PC keyboard that are labeled <b>F1</b> through <b>F10</b> (or <b>F1</b> through <b>F12</b> ) that perform specific functions within the RSS.
GET	The term used for the process by which personality data is transferred from a radio codeplug or from a radio archive file to the computer’s RAM for use by an RSS user. Synonymous with “READ”.
Group	A collection of radios the users of which communicate with each other on a regular basis.
Group ID	This ID is used to call a number of radios that form a group.
Hz	Hertz, or cycles per second.
Handshaking	The data interchange that takes place between the radio and the Central Controller via the control and voice channels. This is to make sure that each side knows that the other is present on the channel and is ready to exchange information or allow voice conversation to proceed.
Hard Disk	An alterable permanent magnetic storage medium with a much larger storage capacity than a diskette, located inside the computer’s system unit.

HearClear™	An advanced audio processing technology that reduces noise and provides crisp, clear audio. It can enhance reception even in marginal conditions. This type of processing is only used in Motorola 900 MHz systems and is not used in Motorola 800 MHz systems.
Home Channel	The channel the user was on prior to pushing the SCAN button.
Home Revert	The channel the user will revert to when PTT is pressed while in scan mode unless the scan talkback feature is enabled. Defines the transmit channel requirement for a feature. Typically refers to scan mode operation.
kHz	Kilohertz, thousands of cycles per second.
Key	Refers either to a button on the radio or computer's keyboard or to the act of turning the transmitter to the on position.
LCD	Liquid Crystal Display.
LED	Light Emitting Diode. A visual indicator on the radio that flashes or glows.
Logic Board	The circuit board within the radio that contains the embedded microprocessor and other logic-related components.
Low Battery Alert	An audible alert tone that is generated when the radio's battery charge is low.
MDC-1200	A Motorola-proprietary signaling format. It is a binary format using a 1200-baud Minimum Shift Keying modulation. MDC-1200 is used for IDs, Selective Signaling, Emergency, Status/Message and Text.
MHz	Megahertz, million of cycles per second.
MS-DOS	Microsoft Disk Operating System. The operating system used by IBM compatible computers.
Menu	Contains a list of functions that can be selected and performed by pressing a function key. Also see "Screen".
Memory Dialer	A DTMF phone number dialer that stores up to 16 phone numbers. Each phone number can contain up to sixteen DTMF digits.
Message Time-Out Timer	A timer in the system Central Controller that maintains a channel allocation for calling parties. The timer may be programmed to time out the channel allocation within 0 to 6 seconds after de-key.
Message Trunking	A type of Trunking operation. When PTT is released, a Portable radio will remain on the voice channel for a pre-programmed period of time. This allows other members of the talkgroup to respond without returning to the control channel for another voice channel assignment. Message Trunking is commonly referred to as Hangtime on the repeater. Message Trunking Systems generate less control channel traffic per conversation than Transmission Trunking Systems.
Microcomputer	The central processing unit that controls the functions of the radio.

Mode	A collection of personality values, such as frequency, PL codes and scan lists. A mode is assigned a number or name that is displayed on the front panel of the radio. Personality values are in effect for the mode displayed. May also be referred to as “channel” or “zone”.
Mode Number	The number assigned to a particular mode.
Mode Slaved	Term used to describe features that are associated with a particular mode.
Mode Slaved Scan	A type of scan that uses a scan list associated with a particular mode.
Mode Slaved Scan List	A scan list that is associated with a particular mode.
One Touch Button	A radio feature that provides the ability to program a specific message, status, call or telephone number to one of the radio’s programmable side buttons.
Operating System	A computer program that coordinates your computer’s activities such as memory allocation, file management, input and output operations, communications and interfacing to other application software packages, such as the RSS.
PL	Private-Line Coded Squelch. A continuous sub-audible tone that is transmitted along with the carrier. A channel that has PL on the receive frequency will require both the presence of a carrier as well as the correct PL code before it will unmute. Also, if PL is on the transmit frequency, all transmissions on that channel will be modulated at a sub-audible level by the PL code. Modulation is continuous. Also, a generic term used to refer to both TPL and DPL.
PL Code	A two-digit alphanumeric code used to represent a specific sub-audible tone.
PTT	Push-To-Talk feature or button located on the left side of the radio which, when pressed, causes the radio to transmit.
PTT-ID	Push-To-Talk IDentification. A feature that identifies a caller instantly. When the user presses the radio transmit button, a signal is activated and the caller’s radio identification appears on the dispatcher’s console.
Port	A parallel or serial hardware interface connection at the back of a computer used to communicate with other hardware devices, such as a radio, a modem, or a printer. Same as “COMport”.
Path	The location of a sub-directory on a disk or diskette. Paths start at the root directory of the disk or diskette and end at the directory containing the desired file. For example, the path C:\MRSS\MAXLS\ARCHIVE shows the hierarchy or ordering of directories that the computer must follow to find a file located in the directory called “ARCHIVE”.
Path Name	See “Path”.
Personality	A term used to describe the data in the radio’s codeplug or in an archive file that contains a set of unique features that is radio or customer specific.

Personality File	A file that contains the data to be stored in a radio's EEPROM. This file contains information such as receive frequency, transmit frequency, squelch code, and so on.
Pop-up Window	A message area that overlaps on a data entry/display area; used to indicate a data entry error or to verify destructive commands and provide function key choices for the next course of action. Also known as the Dialog Box.
Port	An input/output (I/O) port that transmits data one bit at a time; as opposed to a parallel port which transmits multiple (usually eight) bits simultaneously. RS232C is a common serial interface standard. A port on the back of a computer is normally designated by a slot position such as COM1, COM2, COM3 or COM4.
Preferred Site	A feature that provides the ability to prioritize sites within a system. This lets the system steer roaming radios onto fewer overall sites, freeing up system resources for other calls. Low density sites are thus kept open for their intended users.
Pretime	The delay between the time that the operator pushes PTT to the time that the ID is transmitted by the radio. This delay is typically used to make sure that repeater paths are open.
Priority Channel	A channel that is deemed more important to the radio operator than any other. The radio is required to always unmute on activity there even though receiving activity on another channel during priority scan.
Priority Levels	A number given to each radio user on a Trunked system to allow system access to the most critical users during busy periods. Assignment of priority levels is controlled by the System Manager. Three levels of priority are available on a Privacy Plus System and five levels are available on Type I SMARTNET system.
Priority Sample Rate	The rate at which the priority channel is checked for activity in priority scan.
Priority Scan	A feature that scans all channels, but keeps returning to the channel(s) designated as having the highest priority. All Receive frequencies that are assigned as priority are scanned for activity more often than non-priority frequencies. When the radio is locked on a busy non-priority frequency, the scanner will periodically check the priority channels for activity. Priority 1 has a higher priority than Priority 2 and so on.
Privacy Plus	A type of Trunking system which is limited in the options it provides to radio users. The system does not have emergency or dynamic regrouping capabilities. Most shared (Public) Trunking Systems are of the Privacy Plus variety.
Private-Line Coded Squelch	See "PL".
Program Tree	A figurative term used to describe the organization of a multi-level menu-driven software program.
Proper Code Detect	A SECURENET feature that mutes the speaker if the received encryption code does not match the encryption code programmed

into the radio. The user will hear only those transmissions encrypted with his or her radio's individual key.

Quik-Call II	A two-tone sequential tone signalling system or format typically used in portable and paging products.
RAM	Random Access Memory. Used by the computer to store the program it is executing. The radio's RAM is loaded with a copy of the EEPROM data. The program will sometimes write to the radio's RAM to temporarily change certain features such that the user can get immediate feedback. These changes will not become permanent in the radio's codeplug until the radio is programmed.
RAT1 & RAT2	Repeater Access Tones 1 and 2. A hardware control on the side of the radio that lets the user access a repeater.
RIB	See "Radio Interface Box".
RPT/TA	Repeater/Talkaround.
RS-232	An asynchronous, serial data transmission standard for computers that defines the required sequencing, timing and hardware interface.
RSS	See "Radio Service Software".
RSSI	Received Signal Strength Indicator. A DC voltage proportional to received signal strength. On some radio models, there is a visual indication of the received signal.
Radio Check	A feature that allows a dispatcher to discreetly poll a radio to determine whether it is on the air and within range. An MDC-1200 data packet is sent to the target radio and if the radio is on the channel, it will acknowledge the Radio Check. The user will receive no indication of the poll except perhaps a brief lighting of the transmit or busy light.
Radio Interface Box (RIB)	Hardware used to connect a computer system to a radio for the purpose of communication between the radio and the computer. The RIB consists of level-shifting circuits that convert the standard RS-232 voltage levels of the computer to the single-ended voltage levels present on the Serial Bus contacts of the radio's feature connector. An appropriate RIB-to-radio cable and RIB-to-computer cable must be used in conjunction with the RIB to program a radio.
Radio Interface Cable	A cable that allows the radio to be connected to or interfaced with a host computer for programming or tuning purposes.
Radio Service Software (RSS)	Licensed software for use by Motorola product resellers delivered on a 3-1/2" diskette(s) and used to program two-way radios with a unique set of features called personalities.
Random Access Memory	See "RAM".
RapidCall	A method of signalling designed by Motorola Radius Products. This signalling method may include both industry standard and Motorola-proprietary formats, but utilizes common ergonomics and features for each.

READ	The means by which a radio's codeplug information is transferred from the radio's EEPROM to the workspace via the RIB.
Receive Frequency	The center of the receive channel (usually represented in MHz).
Recent User Priority	The ability of the Motorola Central Controller to ensure uninterrupted communications to a recent user of the Trunked system. Recent User Priority ensures that a group engaged in a conversation will get priority access even if there is a significant delay between transmissions.
Registers	Short-term data-storage circuits within the microcontrol unit or programmable logic IC.
Remote Monitor	This feature enables the dispatcher to monitor voice transmission from the radio unit and is of value during emergency situations when the radio operator is unable to press the PTT button.
Repeater	Remote transmit/receive facility that re-transmits received signals in order to improve communications coverage. A repeater will re-transmit information at 125, 70, or 35 Watts of power. A Trunked repeater used in 800 MHz Trunking systems will typically have transmit and receive frequencies separated by 45 MHz depending upon the original communications system configuration.
Repeater Access	A feature that enables radios equipped with it to selectively access multiple repeaters channels automatically. This provides for selective repeater usage on the same channel. This helps maximize wide area systems.
SECURENET™	A method of communication that enables encryption (scrambling) of voice messages transmitted by radios that have this capability. Under this system, the radio operator may elect to transmit in "Clear" (non-encrypted) or "Coded" modes to suit his or her needs.
Scan	A process by which the radio checks a list of stored receive frequencies for activity. If activity is found, the radio will be locked onto that frequency until the frequency is no longer active.
Selective Radio Inhibit	A feature that enables the dispatcher to remotely disable a radio unit, thus causing it to appear inoperable to the radio operator. Radios inhibited in this manner can usually be revived using a single command from the terminal. This feature will come in handy if a radio unit is lost or stolen, for instance.
Serial Port	See "Port".
Sidetones	Sidetones are tones generated by the radio, which are heard in the loudspeaker when the radio is in transmit. They are typically used to alert the operator that the microphone is muted.
Signaling Squelch	When Signaling Squelch is active, the loudspeaker will open for channel traffic only if the ID of the radio is detected.
Signaling Systems	Systems used to alert radio operators or perform specific functions using the radio.

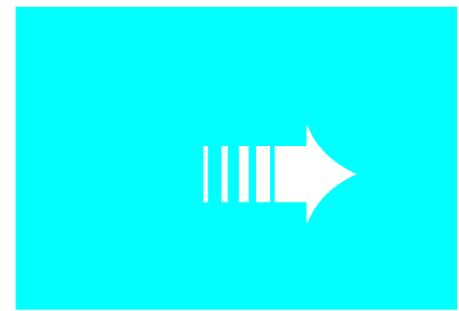
Site De-registration	The automatic site “sign-off” by the radio when the user roams to another site or selects a talkgroup on a different system. This notification alerts the system control equipment that the channels at the site will not be used by that radio until it returns to that site.
SMARTNET™	A type of Trunking system primarily used in support of public safety and industrial communication systems. This type of system has emergency and dynamic regrouping capabilities.
SmartZone™	A wide area coverage system that supports SMARTNET II trunking features including group calls, selective calls and telephone calls as well as unique SMARTNET features such as Emergency Alarm/Call, Dynamic Regrouping, Selective Radio Inhibit and Console Dispatch.
Snapshot	A feature which allows the dispatcher to check the operating mode of any radio in a Trunked system. This feature is used to obtain up-to-the-second reports on a radio’s operating status, talkgroup affiliation, announcement group affiliation, and last registered site of operation.
Softpot	Software potentiometer. A computer-adjustable electronic attenuator.
Squelch	A radio circuit that eliminates noise from the loudspeaker when a transmit or receive signal is not present.
Standby Mode	An operating mode in which the radio is muted but still continues to receive and monitor data.
STAR™	A tone signalling system developed and trademarked by General Electric.
Status/Message	A predefined and stored message or radio status indication sent to the dispatcher without the user having to talk.
Sub-directories	A list of computer directories that are located under a unique directory label.
System Central Controller	Also referred to as Central Controller. Main control unit of the Trunked dispatch system. A software-controlled, computer-driven device that receives and generates data for the Trunked radios assigned to it. The Central Controller is responsible for monitoring and directing the operations of the Trunked repeaters.
System ID	A number assigned to a Trunked system distinguishing it from other systems. The system ID is sent out every three seconds on the Control Channel.
TOT	See “Time-Out Timer”.
TPL	Tone Private-Line Squelch. Private-Line Squelch that uses sub-audible tones to unmute the receiver. Also known as Channel Guard, Quiet Call or CTCSS.
Talkaround Frequency	A frequency used for simplex conversions or radio-to-radio communications without the use of a repeater.
Talkback	A radio feature that allows the user to return a call simply by pressing PTT and articulating a response.

Talkback Scan	<p>Allows the operator to respond to a call on the same channel as the call was received during the talkback time in scan.</p> <p>When the scanner is stopped on a busy channel and the microphone is removed from the hang-up clip, the radio will remain on the busy channel and transmit on the busy channel when PTT is pressed.</p>
Talkgroup	A group of users in a Type II or Type III Trunking system.
Talkgroup Scan	A feature that allows users to monitor multiple talkgroups and conventional channels including talkgroups operating on different Trunked systems.
Talk Permit Tone	A brief programmable series of beeps that provides radio operators with an indication that a voice channel is available for use and is assigned to them.
Talk Prohibit Tone	An audible tone (honk) heard from the radio's speaker when PTT is pressed. The tone will be heard when the radio is out of range of the system or it is programmed with the incorrect system information.
Telephone Interconnect	A feature that gives radio users the ability to place and receive telephone calls through the public telephone network. "Land-line" telephone users can also communicate with an individual radio or an entire talkgroup directly from their telephones.
Time-Out Timer (TOT)	A feature that automatically shuts off the transmitter after a pre-determined (programmable) interval. The radio will alert the radio user with an audible tone before disconnecting. This is designed to prevent lock-up of a repeater or tie-up of a channel due to inadvertent keying of the radio's transmitter. TOT may be customized through field programming.
Tone Private-Line Squelch	See "TPL".
Transmit Deviation Alignment	An electronic method of adjusting the modulation of the transmitter to a constant value across the operating frequency range.
Transmit Frequency	The center of the transmit channel (usually represented in MHz).
Transmit Power Alignment	An electronic method of adjusting the power output of the transmitter to a constant value across the operating frequency range.
Transpond Tone	The Transpond Tone is used as an acknowledgment. This tone is typically not decoded by the console but is heard by the dispatcher through the loudspeaker.
Trunking	The automatic sharing of a communications paths or paths between a large number of users.
Type I	A type of Trunking that is composed of Fleets and Subfleets and is limited by the size of codes of those groups. A Type I system handshaking includes sending of the Acknowledge Tone and High Speed Handshake.
Type II	A type of Trunking system that is composed of Announcement Groups and Talkgroups. A Type II system is limited on Talkgroups and Individual ID combinations to 48,000 IDs and 4,000 Talkgroups per

system. The Type II system handshaking does not include sending Acknowledge Tone and High Speed Handshake.

Type III	A type of Trunking system composed of Fleets, Subfleets and Talkgroups. This Trunking type supports both Type I and Type II Handshaking. This Trunking type also allows Type I radios to communicate with Type II radios on the same voice channel.
Universal ID	A particular personality in a radio unit which is chosen as the one whose Trunking identity will always be used to address this unit. In this manner, a unit would respond to an individual call (Private Call, Call Alert, Phone Interconnect, etc.) regardless of the current personality chosen.
User Scan	Scan type which is programmable through the front panel buttons on the radio.
VCO	Voltage-controlled oscillator; an oscillator whereby the frequency of oscillation can be varied by changing a control voltage.
Vehicular Adapter	Hardware enhancement to a portable radio that enables it to act as a mobile unit.
VSELP	A radio that is equipped with VSELP (Vector Sum Exited Linear Prediction) Digital Operation, uses the VSELP digital signalling protocol to encode and decode digital signals.
Voice Channel	A Trunked repeater that is used to transmit and receive data and voice from the radios on the system.
Voice Sel(ective)Call	A signalling feature that gives radio users a level of privacy by allowing them to choose who hears their messages. The users will be able to direct their transmissions selectively: to a certain individual or to a small group. Transmission will be heard through the speaker only if that radio's ID is sent. Users will therefore not be forced to listen to transmission that does not pertain to them. This type of call leaves no persisting visual nor audible indication.
Wide Area Call	A call in a wide area coverage system which utilizes a voice channel in all sites of the system.
Zone	A collection of channels which have something in common.

# Index



Numerics	
16-Position Rotary .....	37
A	
A/G Failsoft .....	220
A/G Failsoft Frequency .....	220
Access Ack and TOT Tones .....	175
Access Codes .....	153–154
Access PL Freq .....	180
Access Strapping .....	267
Access Type .....	227, 232, 268
Access/Deaccess Codes .....	153
How to Add .....	153
How to Delete .....	153
Ack Alert Tone .....	276
Ack Pretime .....	274
Acknowledge Alert Tone .....	273, 289
Adaptive Power .....	259
Add Conventional Item .....	141
Add DEK Box .....	147
Add Number .....	151
Add Trunked Item .....	141
Aff. (affiliating) Hold Off .....	189
Affiliation Type (Type II/III) .....	196
Alarm Options .....	100, 168
Alarm Rearm Option .....	168
Alarm Type .....	168
Alert Tone Volume Offset .....	102
Alert Tones .....	102
Alias .....	195
Alt Display Time .....	165
Anatomy of a Menu .....	16
Anatomy of a Screen .....	18
Announcement Group .....	216
Archive File	
How to Delete .....	326
Archive File Name .....	81, 90
Archive Path .....	30
Assembling The Hardware .....	10
ASTRO AG Strapping .....	216
ASTRO Button/Switch/Menu Item Defaults .....	37
ASTRO Call List .....	282, 297
ASTRO Capable System .....	204
ASTRO Configuration .....	238
ASTRO Data Peripheral (Mobiles Only) .....	282, 299
ASTRO Features .....	335
ASTRO ID .....	86–87
ASTRO Menu .....	282
ASTRO Options .....	195, 204, 253, 282
ASTRO Options (More) .....	287
ASTRO Radio Wide Options .....	283
ASTRO Strapping (for Revert Announcement Group) .....	230
ASTRO Strapping (for Revert Fleet ID) .....	230
ASTRO Strapping (for Revert Subfleet) .....	230
ASTRO Strapping (for Revert Talkgroup) .....	230
ASTRO System .....	258, 288, 292, 295
How to Add .....	287
How to Delete .....	287
ASTRO System Options .....	291
ASTRO System Remote Options .....	292, 295
ASTRO Systems .....	282, 287
ASTRO Unlimited Calling .....	259
Auto Access Code Select .....	252
Auto Dial Holdoff .....	187
Auto Light .....	166
Auto Login .....	108
Auto Power Adaption .....	205
Auto Reset Time .....	275, 292
Auto Rotary Light .....	122
Auto Scan .....	255
Auto Sel Call Transmit .....	251, 259
Auxiliary System .....	238
Auxiliary Systems Menu .....	304
B	
Banner Screen .....	15
Base Repeater .....	177
Baud Rate .....	299
Block Pending CA/PC .....	103
Bootstrap Code Path and FileName .....	30
Busy LED .....	254
Busy Override Chirp Ack .....	189
Busy Override Delay .....	189
Button 1-4 .....	210
Button Configuration .....	124
Button/Switch/Menu Item Defaults .....	37
C	
CAI .....	294

CAI (Common Air Interface) .....	284	Connect Tone .....	196
CAI Data Min Response Timer .....	284	Connecting the Hardware .....	11
CAI Data Registration .....	294	Console Acknowledgement Required .....	228
CAI Data Response Timer .....	284	Control Channel .....	195, 198, 200, 203, 221
Call Alert Decode .....	250, 258	How to Add .....	198, 201
Call Alert Encode .....	251, 258	How to Delete .....	198, 201
Call Alert Operation .....	218	Conv PPI Timing (sec) .....	177
Call ID .....	236, 280, 298	Conventional Data Configuration .....	98
How to Add .....	235, 297	Conventional ID .....	84
How to Delete .....	235, 297	Conventional Item .....	142
Call ID List .....	220	Conventional Menu .....	237
Call ID Number .....	298	Conventional Message Alias List .....	308
Call ID Type .....	298	Conventional Personality .....	238, 241, 253
Call List .....	236	How to Add .....	241
How to Add .....	235	How to Delete .....	241
How to Delete .....	235	How to Print Data .....	314
Call Text .....	236, 280, 298	Conventional Personality Phone Options .....	252
Carrier Detect Required .....	162	Conventional Personality RAC Options .....	267
Caution		Conventional Print Menu .....	318
What it means .....	9	Conventional Radio Personality Chart .....	38
Change Archive .....	326	Conventional Radio Wide Options .....	238–239
Change/View Menu .....	97	Conventional Secure Personality .....	246
Changing A Field Value .....	22	Conventional Signalling System Features .....	335
Channel .....	104, 197	Conventional Status Alias List .....	309
How to Add .....	310	Conversation Type .....	232
How to Delete .....	310	Coverage Type .....	196
Channel Assign Type .....	207	Creating a Back-up Copy of RSS Diskette(s) .....	12
Channel Bandwidth (806) .....	208	Crystal Pull .....	180
Channel Bandwidth (821) .....	208	CSS Position .....	265
Channel Delay .....	119	Current Archive .....	326
Channel Name .....	311	Cyclic Keying .....	121
Channel Number .....	311		
Channel Spacing .....	256	D	
Channel Text Size .....	163	Data Enable .....	205
Clone Radio .....	79, 82	Data Frame Sync Seek Period .....	284
Cloning .....	57	Data Group ID .....	286
Across Models .....	viii	Data Operated Squelch (DOS) .....	275
Complete/Full .....	83	Data Peripheral .....	299
Important Notes On .....	82	Data Tx Long Random Range .....	285
Limited .....	83, 86	Data Tx Resp Random Range .....	285
MDC Data .....	85	Data Tx Response Random Range .....	285
Step-by-Step Instructions .....	57	Data Tx Short Random Range .....	285
Coast Time .....	275	Data Tx Time .....	205
Codeplug Display .....	164	Deaccess Codes .....	153–154
Codeplug Version .....	93	Default PA Volume Level .....	172
Colors		DEK .....	124, 316
Setting Screen Colors .....	32	DEK Boxes	
Common Air Interface (CAI) Data Packet .....	286	Number of .....	147
Communications Test .....	29	DEK Button Configuration .....	146
Computer-to-Radio Communication		Delete Conventional Item .....	141
Error Codes .....	329	Delete DEK Box .....	147
Concentric Rocker Switch .....	137	Delete Number .....	151
Options .....	139	Delete Trunked Item .....	141
Configure Paths and Port .....	29	Designated Tx Mem .....	160
Configuring Computer Defaults		Dialing Options .....	151, 155
from the RSS .....	23	Digit Duration .....	156, 252
Configuring Paths and Port .....	29		

Digital Modulator Type .....	205	Failsoft Frequency .....	223, 225
Direct Entry Keypad (DEK) .....	124	Failsoft Hold Time .....	162
Direct Frequency Enabled .....	240	Failsoft Inactivity .....	189
Direct Network ID .....	261	Failsoft Key Select .....	203
Direct/Talkaround .....	242	Failsoft Type .....	217
Diskette Contents .....	12	Fast Scroll Rate .....	164
Dispatcher Interrupt .....	232	Feature Options .....	100
Display Light Time .....	165	Fields	
Display on Mode Change .....	113	Direct-Entry Fields .....	22
Display on PTT .....	113	Information Fields .....	22
Display On Secure Switch Select .....	113	Scrollable Fields .....	22
Display Options .....	100, 163	File Maintenance Menu .....	324
Display Site Trunking .....	189	File Name .....	326
Display Sys/Sub .....	166	File, how to delete .....	324
DOS (Data Squelch) .....	275	Filter Constants K1, K2, and K3 .....	191
DPL Codes .....	245, 333	Filter Threshold Constants T1, T2, and T3 .....	191
DPL Invert .....	245	FLASH Software Path .....	30
DTMF Access Codes .....	151	FLASHport Upgrade Menu .....	328
DTMF Access Timing Table .....	252	Fleet ID .....	216
DTMF Access/Deaccess Codes .....	153	Foreword .....	vii
DTMF Deaccess Codes .....	151	Frequency .....	221, 244
DTMF Digit Hangtime .....	155	Front-End Filter Alignment	
DTMF Pause Time .....	155	(Portables Only) .....	74–75
Duplicate II/Ili ID .....	84, 86	FTR Key .....	93
Dynamic Announcement Group Key Select .....	203	Full Cloning .....	83
Dynamic Priority .....	158	Full Spectrum CC Scan .....	190
Dynamic Regrouping .....	197	Full Spectrum CC Scan Timer .....	190
Dynamic Talkgroup Key Select .....	203		
<b>E</b>			
Emer Priority Tx Inhibit .....	276	<b>G</b>	
Emergency .....	272, 288	Generate Key-Loss-Key .....	116
Emergency Alarm .....	227	Get Archive .....	79
Emergency Blocked In Failsoft .....	188	Get Codeplug Data From Archive File .....	81
Emergency Call .....	227	Get/Save/Program Menu .....	77–78
Emergency Data Configuration .....	226	Global Tx Multiplier .....	276, 293
Emergency Limited Patience Time .....	276		
Emergency Options .....	102, 215	<b>H</b>	
Emergency Receive .....	166	H35 .....	46–47, 49
Emergency Revert .....	260	H37 & H38 .....	46–47, 49
Emergency Type .....	273, 289	Hand-Held Control Button Configuration	
Encrypted Only OTAR Ack .....	116	(ASTRO SABER Portables Only) .....	132
Encryption .....	109, 111	Hand-Held Control Head Button .....	129
End of Voice Timer (sec) .....	167	Hard Disk	
Erase Previous Index on Index Change .....	117	Organization .....	31
Erase Previous Index on User Change .....	114	Hard Disk Installation .....	13
Evacuation Tone .....	122	Hardware Encryption Multikey	
Exiting The RSS .....	25	Options .....	106, 109
Ext Alarm Delay .....	169	Hardware Key Name .....	109
Ext Radio Ignition .....	172	Hardware Slot .....	110
<b>F</b>			
F/S Frequency .....	220	HHCH Buttons .....	129
F/W Failsoft .....	220	High Deviation Tx .....	205
F/W Failsoft Frequency .....	220	HiLo Airhorn Tones .....	173
Failsoft .....	223, 225	Home Mode Selection .....	104
		Horn and Lights .....	168
		Horn Duration .....	169
		Hot DTMF Timing .....	208
		Hot Keypad .....	243

Hot Keypad (DTMF) .....	219
How to	
Add a Call ID .....	235, 297
Add a Call List .....	235
Add a Channel .....	310
Add a Control Channel .....	198, 201
Add a Conventional Item .....	141
Add a Conventional Personality .....	241
Add a Message Alias Entry .....	308
Add a New Phone Number Entry .....	151
Add a Preferred Site .....	233
Add a Repeater ID .....	281
Add a Scan List .....	157
Add a Single Tone .....	307
Add a Single Tone System .....	305
Add a Status Alias Entry .....	309
Add a Subfleet .....	222
Add a Talkgroup .....	224
Add a Trunked Item .....	141
Add a Trunking Personality .....	215
Add a Trunking System .....	194
Add a Zone .....	310
Add an ASTRO System .....	287
Add an MDC Call ID .....	279
Add an MDC System .....	270
Back-up the RSS Diskette(s) .....	12
Change a Field Setting .....	22
Change the Archive Directory Path .....	81
Clone Radios .....	57
Configure Computer Defaults from the RSS .....	23
Create a Directory .....	325
Create a New Directory from within the RSS .....	324
Delete a Call ID .....	235, 297
Delete a Call List .....	235
Delete a Channel .....	310
Delete a Control Channel .....	198, 201
Delete a Conventional Item .....	141
Delete a File .....	324, 326
Delete a Member from the Scan List .....	157
Delete a Message Alias Entry .....	308
Delete a New Phone Number Entry .....	151
Delete a Personality .....	241
Delete a Preferred Site .....	233
Delete a Repeater ID .....	281
Delete a Scan List .....	157
Delete a Single Tone .....	307
Delete a Single Tone System .....	305
Delete a Status Alias Entry .....	309
Delete a Subfleet .....	222
Delete a Talkgroup .....	224
Delete a Trunked Item .....	141
Delete a Trunking Personality .....	215
Delete a Trunking System .....	194
Delete a Zone .....	310
Delete an Archive File .....	81, 326

Delete an ASTRO System .....	287
Delete an MDC Call ID .....	279
Delete an MDC System .....	270
Exit the RSS .....	25
Install the RSS .....	13
Navigate through the RSS .....	17
Print Alarm Options .....	315
Print Conventional Data .....	314
Print Display Options .....	315
Print Feature Options .....	315
Print Phone Options .....	315
Print Radio Configuration Data .....	313–314
Print Radio Options .....	315
Print Scan Options .....	315
Print Trunking Data .....	314
Program Trunking Personalities .....	53
Read the Codeplug .....	80
Save Configuration Information .....	29
Set Up the Equipment .....	11
Hub Defeats PL .....	240
HUB Suspends Scan .....	162

## I

ICM PPI .....	176
ID Display .....	167
Ignition Switch .....	140
Ignore Site Resource Preference .....	233
Impolite Retries .....	276, 293
In Car Monitor Default .....	176
Index .....	210
Index Name for Index 1 .....	114
Index Name for Index 2 .....	114
Index User Selectable .....	114
Indexed .....	110
Indexing Keys .....	111
Individual ID .....	87, 195, 217, 288
Individual Selective Call .....	300
Infinite Key Retention .....	108
Initial Delay .....	156, 252
Installing The RSS .....	12
Installing the RSS .....	13
Instruction Area .....	16
Integer Delay .....	252
Interconnect Key Select. ....	203
Interdigit Delay .....	156
Inter-Packet Time .....	275
IP Address .....	299–300
ISW Window Adjust .....	187
Italicized Text	
What it means .....	9

## K

Keep Alive .....	119
Key Entry Menu .....	112
Key ID .....	249
Key ID Receive HangTime .....	113

Key ID Transmit HangTime .....	114	Menu Item Configuration .....	124
Key LIDs .....	112	Menu Map of RSS .....	19
Key Number .....	109, 111	Message .....	219, 272, 288
Key Select .....	225	Message Alias .....	206, 212, 238
Key Selection .....	247	How to Delete .....	308
Key Strapping .....	247, 249	Message Alias Item (Trunking)	
Key Variables .....	112	How to Add .....	212
Keypad Menus .....	37	How to Delete .....	212
KMC ID .....	117	Message Alias List .....	308
<b>L</b>			
Last Programmed Date .....	90	Message Alias Number .....	212, 308
Latch Enable Time .....	239	Message Alias Text .....	212, 308
Latch Enable Tone .....	239	Message Aliasing .....	208
Late Entry Fast Unmute .....	260	Message Text .....	32
Leading PTT-ID .....	271	Message Trunked .....	232
Light Duration .....	169	Minimum Alert Tone Volume .....	102
Limited Cloning .....	84, 86	Minimum Volume .....	102
Limited Patience .....	292	Mobile Detector .....	174
Limited Patience Time .....	275, 293	MODAT .....	86, 88, 238, 303
Long Keypress Duration .....	104	Modat Unit ID .....	88
Low Battery LED .....	103	Mode Steering .....	174, 179
Low Battery Standby Chirp .....	103	Mode/Channel Assignment .....	98
Low Battery Tx Chirp .....	102	Model Number .....	90, 93
<b>M</b>			
Main Menu .....	26	Monitor Hold Time .....	162
Man Acc Live Dialing .....	151	Monitor Type .....	239
Mandatory Password .....	166	More Conventional Options .....	242
Manual Channel Change Timer .....	167	More Conventional Personality Options .....	253
Manual Tone .....	173	More MDC Options .....	270
Max CAI Data Tx Attempts .....	284	More Multikey Options .....	106
Max CAI Packet Size .....	284	More Multikey Parameters .....	113
Maximum Channels (Talkgroups) .....	104	More Radio Wide Options .....	100, 102
Maximum Password Length .....	166	More Radio Wide Options (Mobiles Only) .....	171
MDC Call ID		More Trunking Options .....	195, 215
How to Add .....	279	Motorcycle Radio .....	122
How to Delete .....	279	Multikey Options .....	195, 201
MDC Call List Table .....	279	Multikey Parameters (More) .....	113
MDC Configuration .....	238	Mute Tones Operation .....	104
MDC Configuration Menu .....	269	<b>N</b>	
MDC Data Cloning .....	85	Navigating Through The RSS Menus .....	17
MDC Options .....	241, 250	New Softpot Value .....	62–63, 68, 70–71, 73, 75
MDC Repeater ID .....	281	New Softpot Value Mid Pwr .....	68
MDC System .....	270–271, 274, 277	Non-Priority Members .....	159
How to Add .....	270	Non-Tactical .....	228
How to Delete .....	270	Non-XL Scan Unsquench Duration .....	107
MDC System # .....	117, 243	Nuisance Mode Delete .....	161
MDC System Options .....	269, 274	Number of DEK Boxes .....	147
MDC System Remote .....	274	Number of Prefix Characters .....	167
MDC System Remote Options .....	277	Number of User Selectable Hardware Keys .....	109
MDC Unlimited Calling .....	251	Number of User Selectable Software Keys .....	111
Member		<b>O</b>	
How to Delete from Scan List .....	157	One Touch Buttons 1- 4 .....	240
Menu		One Touch Buttons 1-4 Index .....	256
Anatomy of .....	16	One-Touch Button Options .....	206, 209
		Operation .....	275
		Operator Select ICM .....	176

Options Audio Muting .....	172
Orange Button .....	37
Organizing Your Hard Disk .....	31
OTACR .....	258, 265
OTACR Command Limited Patience Time .....	265
OTACR Feature .....	263, 265
OTACS .....	258, 265
OTACS Feature .....	265
OTAR .....	108
OTAR Ack .....	116
OTAR Options .....	115
OTAR Tx .....	249
Out of Range .....	103
Override Timer .....	254
Over-The-Air Re-keying Feature Options .....	106
Over-The-Air-Channel-Reassignment .....	265
Over-The-Air-Channel-Reassignment (OTACR) .....	258
Over-The-Air-Channel-Steering .....	265
Over-The-Air-Channel-Steering (OTACS) .....	258
<b>P</b>	
PA Ignition Sense .....	172
Password .....	166
Patch Key Select .....	203
Periodic Keyfail Alert Tone .....	107
Permanent Horn & Lights .....	168
Personality .....	242, 252, 254, 258, 267
How to Add .....	241
How to Delete .....	241
Personality Chart .....	38
Personality MDC Options .....	250
Personality Number .....	223, 225, 311
Personality Type .....	311
Phone Configuration .....	151
Phone Dialing .....	155
Phone DTMF Timing .....	208
Phone Interconnect .....	219
Phone Num Display Format .....	151
Phone Number .....	152
Phone Operation .....	243
Phone Options .....	242, 252
Phone Text .....	152
Phone Tx Options .....	100
PL Code .....	182, 245
PL Frequency .....	181
Polite Retries .....	275, 293
Portable Products Test Set .....	10
Power-Up OTAR Ack .....	116
Preamble During Pretime .....	274
Preamble Length .....	204, 288
Prefer Status .....	234
Preferred Site .....	
How to Add .....	233
How to Delete .....	233
Preferred Sites .....	233
Prefix .....	167
Prerequisites .....	8

Pretime .....	303
Primary ID .....	271
PRINT .....	314
Print .....	
Alarm Options .....	315
Button and Switch Options .....	315
Button Configuration .....	316
Conventional Data .....	314
Display Options .....	315
Menu Item Configuration .....	316
Phone Options .....	315
Radio Codeplug Data Summary .....	314
Radio Configuration .....	314
Radio Options .....	315
Scan Options .....	315
Switch Configuration .....	316
Trunking Data .....	314
Trunking ID List .....	317
Trunking Personality Data .....	317
Trunking Radio Wide Option Settings .....	317
Trunking System Data .....	317
Zone/Channel Assignment .....	
Information .....	314
Print Menu .....	314
Priority 1 Member .....	159
Priority 1 Type .....	159
Priority 2 Member .....	159
Priority 2 Type .....	159
Priority Chan Marking .....	162
Priority Scan Alert .....	161
Priority Tx Inhibit .....	293
Private Call Key Select .....	203
Private Call Operation .....	218
Private Call Type .....	218
Program Data Into Radio Codeplug .....	44, 56
Program Radio .....	79, 84
Program Source .....	90, 93
Program Trunking Personalities .....	53
Program Zone/Channel Features .....	42
Programmable Features .....	7
Programmed Date .....	93
Programming Codeplug Blocks .....	91
Programming History .....	92
Programming the Radio's Codeplug .....	91
Proper Code Detect .....	232, 248
Proper Code Enhancer .....	108
Protocol Type .....	215, 227
PTT ID display feature .....	163
PTT Sidetone .....	273, 306
PTT-ID .....	232, 243
PTT-ID Display Options .....	167
PTT-ID Sidetone .....	271
Pulse Width .....	258

## Q

Quick Key Override .....	254
--------------------------	-----

## R

RAB 1 Code Type .....	268
RAB 1 Singletone .....	268
RAB 2 Code Type .....	268
RAB Sidetone .....	306
RAC Ack Alert Tone .....	276
RAC Options .....	253, 267
RAC Preambles .....	276
RAC Pretime .....	276
Radio Check .....	271, 293
Radio Codeplug Version .....	93
Radio Inhibit .....	272, 292
Radio Inhibit via OTAR .....	117
Radio Interface Box .....	10
Radio Lock .....	166
Radio Options .....	100
Radio Software Version .....	93
Radio Type .....	37
Radio Wide Button Configuration .....	125, 128
Radio Wide Configuration Menu .....	98–99
Radio Wide Display Options .....	163
Radio Wide Features Configuration Menu .....	123
Radio Wide Features Configuration Print Menu .....	315–316
Radio Wide Menu Item Configuration .....	141
Radio Wide Options .....	101, 106, 118, 120
Radio Wide Scan Lists and Options .....	157
Radio Wide Switch Configuration .....	140
Radio Wide Switch Configuration (Portables Only) .....	136
Rd Lap .....	259
RDN4046A .....	10
Read Radio Codeplug .....	79
Read RSSI .....	75
Read Serial Number .....	84
Read the Codeplug .....	27
Reading Codeplug Blocks .....	80
Reading Codeplug Data From the Radio .....	80
Reading Codeplug Data from the Radio .....	27
Reading Disk Codeplug Files .....	27
Reading the Codeplug .....	27
Receive Only .....	242
Received Signal Strength Indication .....	190
Receiver Alignment Menu (Portables Only) .....	61, 74
Receiver VCO Alignment (Portables Only) .....	76
Receiver VCO Crossover Alignment (Portables Only) .....	74
Reference Oscillator Alignment .....	65–66
Rekey Request Status Alert Tone .....	117
Remote Keyup Time Constant .....	117
Remote Mon/Radio Trace .....	295
Remote Monitor .....	197
Remote Monitor via OTAR .....	117
Remote Monitor/Radio Trace .....	277
Remote Radio Mode .....	278, 296
Repeat Mode .....	175
Repeater Access .....	267
Repeater ID .....	281
How to Add .....	281
How to Delete .....	281
Repeater ID List .....	269
Repeater PPI (sec) .....	176
Retry Counter .....	228
Reverse Burst TOC .....	255
Revert .....	244
Revert Announcement Group .....	229–230
Revert Announcement Group Strapping .....	229
Revert Channel Table .....	289, 303
Revert Fleet ID .....	229
Revert Fleet ID Strapping .....	229
Revert PTT-ID .....	228
Revert Size Code .....	228
Revert Subfleet .....	229–230
Revert Subfleet Strapping .....	230
Revert Table .....	273
Revert Talkgroup .....	230
Revert Talkgroup Strapping .....	230
RF Modem .....	187
RIB .....	30
RIB Power Supply .....	10
RIB-to-Radio Cable .....	10
RKN4035A .....	10
RKN4047A .....	10
RLN1015B .....	10
RLN4008B .....	10
RM Base Time .....	197
Rocker Switch (flat) .....	37
Rotary Alert .....	103
Rotary Light Time .....	121
Rotary Switch (Scan Prgm) .....	103
RS232 Packet Data .....	258
RSS Menu Map .....	19
RSSI Acceptable Threshold .....	190, 192
RSSI Excellent Threshold .....	190
RSSI Good Threshold .....	190
RSSI OSW Counter .....	190
RTX4005A .....	10
RTX4005B .....	10
Rx Base Time .....	279, 297
Rx Emphasis .....	255
Rx Hold Time .....	161
Rx Modulation .....	207
Rx Network ID .....	261
Rx Unmute Delay .....	254
Rx Unmute Rule .....	260
Rx VCO Crossover .....	74
Rx Voice/Signal Type .....	244
<b>S</b>	
<b>SABER</b>	
Hand-Held Button Configuration .....	132

Mobile Radio Button Locations .....	50	Single Tone	
Portable Button Location Diagram .....	39	How to Add .....	307
Programming SABER portables .....	viii	How to Delete .....	307
SABER I .....	37	Single Tone Freq (Hz) .....	178
Button/Switch/Menu Item Defaults .....	46	Single Tone System	
SABER II .....	37	How to Add .....	305
Button/Switch/Menu Item Defaults .....	47	How to Delete .....	305
SABER III .....	37	Singleton List .....	304, 307
Radio Button/Switch/Menu Item Defaults .....	49	Singleton Systems .....	304–305
SABER vs. XTS 3000 (Note on) .....	viii	Siren and PA Options (Mobiles Only) .....	172
SAVE ARCHIVE .....	79	Siren Ignition Sense .....	173
Save Configuration .....	29	Siren Option .....	171
Save Dim State .....	164	Siren PA After Reset .....	173
Saving Codeplug Data to an Archive File .....	89	Siren/PA Options .....	171
Scan Holdoff Strapping .....	248	Site Alias .....	207, 213
Scan ID Display .....	167	Site Alias Item (Trunking)	
Scan List .....	158, 220, 242	How to Add .....	213
How to Add .....	157	How to Delete .....	213
How to delete .....	157	Site Alias Number .....	213
Scan List and Options .....	157	Site Alias Text .....	213
Scan Lists and Options .....	157	Site Aliasing .....	208
Scan Options .....	100, 157, 161	Site ID .....	196, 233
Scan Select .....	248	Size Code .....	216
Scan Signal Time .....	288	Slow Scroll Count .....	164
Scan Type .....	158	Slow Scroll Rate .....	164
Scan Voice Detect Time .....	288	Smart PTT .....	254
Screen Layout .....	18	Smart PTT Quick Key Timer .....	240
Second LO Side Injection .....	255	Smart PTT Retry Timer .....	240
Secondary ID .....	271	Smart Radio Interface Box .....	10
Secure Hardware Equipped .....	105	Smart RIB Power Supply .....	10
Secure Options .....	102, 241	Smart RIB-to-Radio Cable .....	10
Secure Personality .....	246	SmartZone Environment .....	187, 189
Secure Voice/Signal Type .....	246	SmartZone Preferred Sites .....	231, 233
Secure/Clear Strapping .....	247	Soft ID .....	287, 290
Sel Call Reset .....	275, 292	Soft ID Feature .....	290
Selectable .....	263	Soft Power Off .....	122
Selectable Keypad Mute .....	104	Software Encryption Multikey Options .....	106, 111
Selective Call Decode .....	251, 258	Software Key Entry .....	106
Selective Call Encode .....	259	Software Key Entry Menu .....	112
Self Test Alert Tone .....	102	Software Key Name .....	111
Serial Number .....	90, 93	Software Option .....	93
Service Functions .....	7	Software Slot .....	111–112
Service Menu .....	60, 62	Software Version .....	93
Service Software Configuration .....	28	Spacing (kHz) .....	200
Set up a Default Communications port .....	24	Splinter Channel (800 MHz Only) .....	207
Set Up Default Archive/Back-up Paths .....	24	Squelch (Fine Tune) .....	255
Setting a Default Port .....	24	Squelch Type .....	245
Setting Default Archive and Backup Paths .....	24	SRIB .....	10
Setting Screen Colors .....	32	SRIB Software Path and FileName .....	30
Setup Computer Configuration .....	28	Starting the RSS .....	14
Short Keypress Duration .....	104	Start-Up Procedure .....	14
Side Button 1 .....	37	Status .....	200, 219, 221, 272, 288
Side Button 2 .....	37	Status Alias .....	206, 211, 238
Side Button 3 .....	37	How to Add .....	309
Signalling .....	243	How to Delete .....	309
Silent Alarm .....	119	Status Alias List .....	309
Silent Override w/ Mon .....	293	Status Alias Number .....	211, 309

Status Alias Text .....	211, 309
Status Aliasing .....	208
Status Request .....	272, 288
Status Text .....	32
Steering Destination .....	183
Steps to Connect the Hardware .....	11
Stop Bits .....	299
Strapped .....	263
Strapping .....	216, 223, 225, 230
Subfleet .....	222–224
How to Add .....	222
How to Delete .....	222
Switch Configuration .....	124
Sync Mode .....	260
System .....	195, 198, 200–201, 207
System ID .....	195
System Key .....	30, 195
System Pretime .....	274
System Search Time .....	162
System Type .....	195
System Wide Key Select .....	203
System Wide Transmit .....	232
System/ID .....	216
<b>T</b>	
Tactical .....	228
Talk Inhibit Tone .....	284
Talk Permit Tone .....	232
Talkgroup .....	223, 262
How to Add .....	224
How to Delete .....	224
Talkgroup Alias .....	301
Talkgroup Alias Test .....	301
Talkgroup Assignment .....	310
Talkgroup Hang Time .....	292
Talkgroup ID .....	87, 288, 301
Talkgroup List .....	263
Talkgroup Number .....	311
Talkgroups/Subfleets .....	215
Telephone Interconnect .....	187
Temp Msg Display Time .....	165
Text Justification .....	163
Three-Position Toggle Switch .....	37, 137
Three-Position Toggle Switch Options .....	139
Time-Out Timer (TOT) .....	218, 242
Time-Out Timer Table .....	122
Toggle High Tone PTT .....	70
Toggle Low Tone PTT .....	70
Tone .....	307
Tone Duration .....	306
Tone Pretime .....	306
Tone Signalling System .....	267
Top Button .....	37
TOT Duration (sec) .....	178
TOT Tones .....	175
TPL Frequencies and Codes .....	331
Trailing PTT-ID .....	271
Transmission Trunked .....	232
Transmit Deviation Balance (Compensation)	
Alignment .....	69
Transmit Deviation Limit Alignment .....	65
Reference .....	72
Reference Softpot .....	65
Transmit Deviation Limit Alignment	
(Portables Only) .....	71
Transmit Power Alignment .....	65, 67
Transmit VCO Crossover Frequency .....	65
Transmitter Alignment .....	61
Transmitter Alignment Menu .....	62
Trunk Item .....	144
Trunk Repeater Offset .....	207
Trunked PPI Timing (ms) .....	177
Trunking Access Tones .....	175
Trunking Call List .....	185
Trunking Call List Table .....	235
Trunking Data Configuration .....	98
Trunking Emergency Data Configuration .....	226
Trunking Menu .....	185
Trunking Message Alias .....	212
Trunking One-Touch Button Options .....	209
Trunking Personality .....	185, 214–215
Trunking Personality Options .....	231
Trunking Print Menu .....	317
Trunking Radio Wide Options .....	185–186
Trunking Signalling System Features .....	336
Trunking Site Alias .....	213
Trunking Status Alias .....	211
Trunking Subfleets .....	222
Trunking System .....	185
Trunking System ID .....	158
Trunking System Options .....	206
Trunking System Type .....	158
Trunking Systems .....	194
Trunking Talkgroups .....	224
Tutorial .....	35
Assign Controls .....	55
Clone Current Radio From Archive File .....	57
Cloning .....	57
Create a Talkgroup Scan .....	54
Fill In the Scan List .....	44
Program Conventional Personalities .....	42
Program Personality into Archive/	
Back-up Files .....	45
Program Personality into Codeplug .....	44
Program Private Call .....	55
Program Radio-Wide Features .....	41
Program the Phone List .....	42
Program Trunking Systems .....	52
Program Zone/Channel Features .....	43
Programming an ASTRO	
Conventional Radio .....	35
Programming an ASTRO Trunked Radio .....	45
Read Radio Codeplug .....	41

Two Alarm Option .....	168	Voice-On-Control Options .....	187, 191–192
Two-Position Concentric Switch .....	137	Voice-On-Control Site Lock Time .....	192
Options .....	138	VRS Options (Mobiles Only) .....	174
Two-Position Switch .....	37	VRS-EP Mode Steering (Mobiles Only) .....	181
Tx Base Time .....	278, 296	VRS-EP Option .....	171
Tx Clear Alert Tones .....	107	VRS-EP Options .....	171
Tx Deviation .....	256	VRS-EP Tx PL Forwarding .....	179
Tx Deviation Balance (Compensation) Alignment		VRS-EP Tx PL Freq .....	178
65		VRS-EP Tx Squelch Type .....	178
Tx Deviation Limit Alignment .....	65		
Tx Deviation T/A .....	256	W	
Tx Emphasis .....	255	W3 Control Head	
Tx Inhibit On Busy .....	251	Button Locations .....	50
Tx Multiplier .....	276, 293	W4 Control Head	
Tx Network ID .....	261	Button Locations .....	50
Tx Power Level .....	254	W5 Control Head	
Tx Power Select .....	207	Button Locations .....	50
Tx Voice/Signal Type .....	225, 244	W7 Control Head	
Type .....	216	Button Locations .....	51
		W9 Control Head	
U		Button Locations .....	51
Ultra Narrow IF Filter .....	121	WAC AMSS .....	215, 221
Unit ID .....	303	Warning	
Unmute Type .....	251	What it means .....	9
Unmute/Mute Type .....	254	Working Area .....	16
Upgrade Radio .....	328		
User Selectable Rekey Request .....	116	X	
User Selectable Software Key Erase Allowed .....	112	XL Delay Following Key ID .....	249
Using This Manual .....	9	XL Encryption .....	107
		XL Scan Unsquelch Duration .....	107
V		XL Transmit .....	248
Variable ID .....	271	XTS 3000	
VCO Crossover Frequency .....	62, 76	About XTS 3000 .....	viii
Vehicle Interface Port (VIP) Input .....	124	Button Location Diagram .....	40
Vehicle Interface Port (VIP) Output .....	124	Programming XTS 3000 Portables .....	viii
View FLASHkey Configuration .....	328	XTS 3000 I .....	37
VIEW HISTORY .....	79	Button/Switch/Menu Item Defaults .....	46
View Programming History .....	79	XTS 3000 III .....	37
View Radio Configuration .....	328	Button/Switch/Menu Item Defaults .....	49
VIP Control of VRS .....	177	XTS 3000 vs. SABER (Note on) .....	viii
VIP IN .....	124, 316		
VIP In .....	149	Z	
VIP Logic .....	178	Zero Level Audio Mute .....	103
VIP OUT .....	124, 316	Zone .....	104, 197
VOC Activation Time .....	193	How to Add .....	310
VOC Options .....	187, 192	How to Delete .....	310
VOC Pended Emer Time .....	193	Zone Name .....	311
Voice .....	247	Zone Number .....	311
Voice Key Selection .....	247	Zone Text Size .....	163
Voice Key Strapping .....	247	Zone/Channel Name .....	184
Voice Secure/Clear Strapping .....	247, 301	Zone/Talkgroup (Channel) Assignment .....	310
Voice-On-Control Capable .....	192		



# RADIO SERVICE SOFTWARE USER'S GUIDE QUESTIONNAIRE

At Motorola, we believe that comments from users provide valuable information for producing high-quality User's Guides. You can help us improve the next revision of this manual by filling out this form and sending it to us.

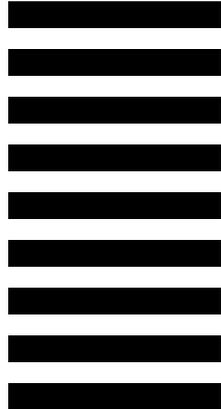
With reference to Manual No. 68-81098E85-O  
**ASTRO SABER/XTS 3000 RSS**

Use the following scale to answer each question listed below. If you have a specific comment about any section, please write it in the space below the appropriate question.

	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4
1. The list of required equipment and the setup procedure are clear and complete.	1	2	3	4
2. The procedure for backing up and installing the software is clear and complete.	1	2	3	4
3. The explanations of keyboard commands and screen arrangement are clear.	1	2	3	4
4. The explanation of the Get/Save procedures is clear and complete.	1	2	3	4
5. The explanation of the Change/View procedures is clear and complete.	1	2	3	4
6. The explanation of the Programming procedures is clear and complete.	1	2	3	4
7. The explanation of the Service/Alignment procedures is clear and complete.	1	2	3	4
8. The explanation of how to print the codeplug is clear and complete.	1	2	3	4
9. The Table of Contents and Index are complete and accurate.	1	2	3	4
10. The illustrations and tables added to the understanding of the explanations.	1	2	3	4
11. The Glossary is helpful.	1	2	3	4
12. The User's Guide is well organized and helpful.	1	2	3	4



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**  
FIRST CLASS MAIL PERMIT NO 9040 FT. LAUDERDALE, FL

POSTAGE WILL BE PAID BY ADDRESSEE



**MOTOROLA**

Attention: Technical Communications  
8000 W. Sunrise Boulevard  
Ft. Lauderdale, FL 33322

FOLD

FOLD

(Continued)

Please identify any errors you may have found and provide any suggestions you may have for improving the next version of this manual.

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Customer       COSC       MSS       FTR       Other

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone Number (Please include Area Code): \_\_\_\_\_

PLEASE USE TAPE TO SEAL  
POSTAL REGULATIONS PROHIBIT USE OF STAPLES



68P81098E85-0

Motorola, Inc.  
8000 West Sunrise Boulevard  
Fort Lauderdale, FL 33322