D/G Series

Keypad Programming and Cloning Instructions

Radio Models:
GPH, GPH-XP, GPH-CMD,
DPH, DPHX, DPH-CMD,
GMH, GMH-XP, DMH

Contents

Introduction

This manual covers information used to program G-Series and D-Series BK Radio models, both portables and mobiles, via the radio's keypad. Not all functions are available on all models. For instance, G-Series radios are not capable of digital operation so functions pertaining to digital operation will not appear when programming the radio.

In addition, the information in this manual can be referenced to program older L-Series and E-Series radios.

Radio Programming Options

There are three different ways to program BK Radio radios:

KEYPAD - A radio can be programmed with it's keypad and a LAA0701 programming plug or cloning cable, LAA0700 or G/ECC. This manual describes these procedures.

CLONING - You can transfer the programmed settings to another radio of the same frequency band by using a cloning cable. See the "Cloning Radio Settings" section of this manual.

PC - With a computer, proper programming software, and LAA 0725 interface cable. That procedure is not described in this manual. Contact BK Radio for the required programming cable and software.

Radio Models

Instructions for keypad programming of the following models are covered in this manual.

GPH	Standard analog portable
GPH-XP	Standard analog portable, extended frequency range
GPH-CMD	Command analog portable
DPH	Standard digital/analog portable
DPHX	Standard digital/analog portable, extended frequency range
DPH-CMD	Command digital/analog portable
GMH	Standard analog mobile
GMH-XP	Standard analog mobile, extended frequency range
DMH	Standard digital/analog mobile, extended frequency range

Entering the Programming Mode

NOTE: Specific settings may be blocked from keypad programming when using the Group or Zone password. Using the Master password overrides these selections and allows for access to all programmable functions.

Portable Radios

Make sure the battery pack is charged.

Some models are shipped with a door covering the keypad and display. Before programming, remove the door by removing the battery pack, engaging the door just below the speaker grill, and sliding the door downward.

Master Switch
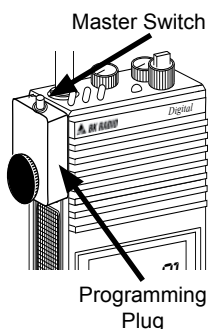
Programming Plug

Insert the programming plug into the side connector of the radio. The push-button master switch will be on the top.

NOTE: The cloning cable can be used as a substitute for the programming plug by inserting the end with the push-button master switch into the side connector of the radio.

Select a channel group to be programmed See "Select A Group/Channel" in the Owner's Manual.

Press and hold the master switch.

-- -- ID

While holding the master switch, press and hold the [FCN] key. After approximately three seconds the LCD will display '- - - ID.'

Release the [FCN] key and the master switch. The radio is now in the Password Entry Mode.

Enter the six-digit password code for the selected group. Without the correct password code, you cannot proceed with programming.

NOTE: New radios shipped from the factory are assigned the password code 000000.

PRG
CH 00

Press the [ENT] key to proceed to Programming Mode. The display will change to PRG CH 00.

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While entering the password code the display will not change, but a beep will sound for each key pressed. If the password code is entered incorrectly, the radio will reset to normal operation.

Mobile Radios
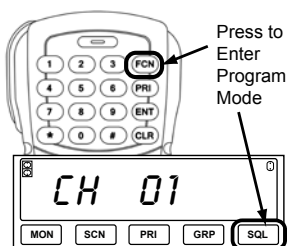
Press to Enter Program Mode

Select a channel group to be programmed See "Select a Group/Channel" in the Owner's Manual.

Press and hold the [FCN] button on the microphone and the far right soft switch on the front of the radio simultaneously.
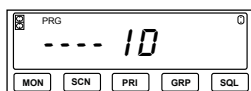
The radio is now in the Password Entry Mode.

Enter the six-digit password code for the selected group. Without the correct password code, you cannot proceed with programming.

Press the [ENT] key to proceed to Programming Mode. The display will change to PRG CH 00.

While entering the password code the display will not change, but a beep will sound for each key pressed. If the password code is entered incorrectly, the radio will reset to normal operation.

Standard Radio Keypad Programming

Portable Models: GPH, GPH Plus, DPH, DPHX
Mobile Models: GMH, GMH Plus, DMH

For CMD models, refer to the "Command Radio Keypad Programming" section.

General Settings (Channel 0)

Channel 0 settings for each group must be programmed separately.

NOTE: Settings listed as Group One Functions, Group Two Functions, and Group Three Functions refer to programming function groups, not channel groups.

Press the [FCN] key repeatedly to view the settings in Channel 0 and then loop back to the CH 00 entry point.

Group/Channel 0 Settings include:

> Group Password
>
> Automatic Numeric Identification
>
> Transmitter Time-Out Timer
>
> Scan Delay Time
>
> Priority 1 Channel
>
> Priority 2 Channel
>
> Group One Functions: 1-12345
> > Battery Saver Inhibit   (Function 1)
> > Group Scan List   (Function 2)
> > Transmit on Priority 1   (Function 3)
> > Priority 1 Lock   (Function 4)
> > Scan List Lock   (Function 5)
>
> Group Two Functions: 2-12345
> > User Code Guard   (Function 1)
> > Busy Channel   (Functions 2 & 3)
> > ANI/DTMF Mode   (Functions 4 & 5)
>
> Group Three Functions: 3-12345
> > Reserved   (Functions 1 & 2)
> > Backlight Settings   (Functions 3 & 4)
> > Display Mode   (Functions 5)
>
> Group Label

Group Password

```
PRG
CH 00
```
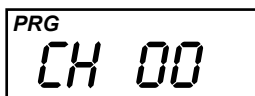
After entering Programming Mode the display will show 'PRG CH 00.'

Press the [FCN] key.

```
PRG
P 123456
```
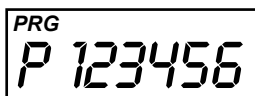
The display will indicate the password for the selected group.

If no change is needed for the group password, press the [FCN] key to advance to the next field.

To enter a new password, press the [CLR] key, then enter a new six-digit password. Press the [ENT] key to store the new password and advance to the next field.

Automatic Numeric Identification (ANI)

```
PRG        ID
0000000
```

After the group password is set, the display will indicate the ANI ID number (as many as seven digits may be used). The ID number can be used for either radio management or transmitted as a DTMF tone burst for ANI purposes. The ANI can be enabled or disabled. See "ANI/DTMF Mode" on page 10 of this manual.

If no change is needed for the ID number, press the [FCN] key to advance to the next field.

To enter a new number, press the [CLR] key and then the number keys. The digits will appear at the right of display and move to the left. Press the [ENT] key to store the new ID number and advance to the next field.

Transmitter Time-Out Timer

After the ID number is set, the display will indicate 'PRG TX.' This is the duration of the transmitter Time-Out Timer. 0 SEC means the Time-Out Timer is disabled.

Press the [FCN] key to advance to the next field if no change is needed.
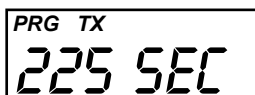
```
PRG  TX
225 SEC
```

Press the [PRI] key to increase the Time-Out Timer duration by 15 seconds, with a maximum of 225 seconds (3 minutes, 45 seconds). Press the [PRI] key again to change the duration from 225 seconds to 0.

Press the [CLR] key to set the Time-Out Timer duration to zero.

Press the [ENT] key to store the changed setting and advance to the next field.

Scan Delay Time

After the Time-Out Timer is set, the upper display will indicate 'PRG SCN.' This is the Scan Delay time in seconds.

Press the [FCN] key to advance to the next field if no change is needed.
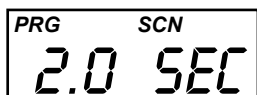
```
PRG        SCN
2.0  SEC
```

Press the [PRI] key to increase the scan delay time by .5 seconds, up to 7.5 seconds. Press the [PRI] key again to change the time from 7.5 seconds to 0.

Pressing the [CLR] key will reset the scan delay time to 0.

Press the [ENT] key to store the changed setting and advance to the next field.

Priority 1 Channel

After the Scan Delay is set, the display will indicate 'PRG PR1.' The Priority 1 Channel can be programmed as a fixed channel, tied to the Channel Selector knob, or programmed OFF. If the radio is programmed to transmit on the Priority 1 Channel, transmissions will occur on PR1, if PR1 isn't programmed OFF, when operating in Single or Dual Priority Scan Mode.

If PR1 is a fixed channel, and the [PRI] key on the keypad is not locked out, during normal radio operation the user can move the channel selector to a new channel and press the [PRI] key to choose a new PR1 channel.

```
PRG
PR 1 ON
```

Press the [PRI] key to cycle through the priority channel options, or enter a fixed priority channel using the number keys.

Setting the channel to ON ties the PR1 channel to the Channel Selector knob. Pressing [CLR] or the [0] key turns the PR1 channel OFF.

Press the [ENT] key to store the new priority channel and advance to the next field.

Priority 2 Channel

After the Priority 1 Channel is set, the display will indicate 'PRG PR2.' The Priority 2 Channel can be programmed as a fixed channel, tied to the Channel Selector knob, or programmed OFF.

The PR2 channel cannot be altered during normal radio operation.

```
PRG
PR 2 OFF
```

Press the [PRI] key to cycle through the priority channel options, or enter a fixed priority channel using the number keys.

Setting the channel to ON ties the PR2 channel to the Channel Selector knob.

Pressing [CLR] or the [0] key turns the PR2 channel OFF.

Press the [ENT] key to store the new priority channel and advance to the next field.

Channel 0 Group One Functions

```
PRG
1 -- 12345
```
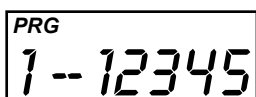
After the Priority 2 Channel is set the display will show 'PRG 1-12345.' This is a group of five individual functions that can be enabled or disabled.

```
PRG
1 -- 12345
```
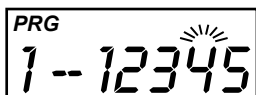
When a function is enabled, the corresponding number in the display will flash. When the function is disabled the number is steady. If you wish to change the function from enable to disable or vice versa, press the number key corresponding to that function.

EXAMPLE: If function 4 (Priority 1 Lock) is disabled, the 4 in the display will not be flashing. If the [4] key is pressed, the 4 in the display will flash, signifying that Priority 1 Lock is enabled. A subsequent press of the [4] key will disable Priority 1 Lock.

Option 1-1: Battery Saver Inhibit

```
PRG
1 -- 12345
```

When function 1 is enabled (flashing) the battery saver is turned off. The battery saver should be turned off only for getting proper voltage readings during service or for systems requiring fast squelch attack time.

NOTE: BK Radio current drain and battery life specifications are based on performance with the battery saver on.

Option 1-2: Group Scan List

```
PRG
1 -- 12345
```

When function 2 is enabled (flashing) the current group will be scanned when the radio is operating in Group Scan Mode.

Option 1-3: Transmit On Priority 1

```
PRG
1 -- 12345
```

When function 3 is enabled (flashing) transmissions will occur on PR1, if PR1 isn't programmed OFF, when operating in Single or Dual Priority Scan Mode.

Option 1-4: Priority 1 Lock

```
PRG
1 -- 12345
```
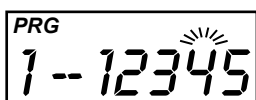
When function 4 is enabled (flashing) the [PRI] key is locked out in the Operating Mode. The user will not be able to change the designation of the Priority 1 Channel.

When function 4 is disabled (steady) the user will be able to change the channel that is designated as Priority 1 Channel. See "Dual Priority Scan" in the Owner's Manual.

Option 1-5: Scan List Lock

```
PRG
1 -- 12345
```
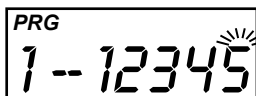
When function 5 is enabled (flashing), the user will not be able to change the channels in the Scan List. When disabled (steady), the user can enter or delete channels from the Scan List. See "Change the Scan List" in the Owner's Manual.

Store Group One Settings

Once each function 1-5 is set as desired, you can store the changes, discard the changes, or disable all 5 functions.

Press the [CLR] key to disable all Group One functions (steady).

Press the [ENT] key to store new Group One settings into memory and advance to the next field.

Press the [FCN] key to advance to the next field without saving changes.

Channel 0 Group One Functions for Older Models

For E-Series and L-Series radios functions 2 and 3 are used to set the group's priority mode.

Option 1-2/3: Priority Mode

Priority Mode A

```
PRG
1-- 12345
```
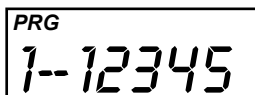
The priority channel follows the channel select switch.

Priority Mode B

```
PRG
1-- 12345
```

The priority channel is fixed.

Priority Mode C

```
PRG
1-- 12345
```

The priority channel is fixed. When in Priority Mode, you will transmit on the priority channel regardless of the channel select knob positron.

Channel 0 Group Two Functions

```
PRG
2-- 12345
```
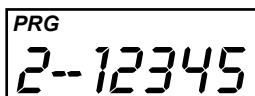
After Group One functions are set, the display will show 'PRG 2-12345' for Group Two functions. As with Group One functions, the enabled function numbers will flash. The disabled functions remain steady

Option 2-1: User Code Guard Selection

```
PRG
2-- 12345
```

When function 1 is enabled (flashing) the user will be able to press the keypad to independently select the Code Guard values that are programmed into Channels 1 through 16 while operating on any Channel

1 through 16. When function 1 is disabled the user will be unable to use the keypad for Code Guard selection. See "User Selected Code Guard" in your Owner's Manual.

Option 2-2/3: Busy Channel Operation

PRG
2--12345

Functions two and three are used to set Busy Channel operation. There are three types of busy channel operation available. They are described more fully under "Busy Channel" in the Owner's Manual.

Busy Channel Modes include:

Busy Channel Indicator - The yellow LED illuminates when a signal is received on the channel selected, with or without the programmed receive Code Guard setting.

Busy Channel Lockout - The yellow LED illuminates and the transmitter PTT is disabled when a signal is received without the programmed receive Code Guard setting.

Busy Channel Override - This function is similar to Busy Channel Lockout except the transmitter PTT can be activated by rotating the Squelch knob clockwise off the Code Guard detent.

To set Busy Channel operation, use the following chart:

	Function 2	**Function 3**
Indication	Disable (Steady)	Enable (Flashing)
Lockout	Enable (Flashing)	Enable (Flashing)
Override	Enable (Flashing)	Disable (Steady)

Option 2-4/5: ANI/DTMF Mode
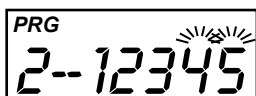
PRG
2--12345

When function 4 is enabled (flashing) the ANI ID number will be transmitted (as a DTMF tone sequence) with each press of the PTT switch. See "Automatic Numeric Identification (ANI)" on page 5 of this manual for instructions on setting the ANI number.

When function 5 is enabled (flashing) the keypad becomes active for manual DTMF operation.

When functions 4 and 5 are both enabled (flashing) the ANI tone sequence will be transmitted only after the [ENT] key is pressed while the transmit PTT switch is activated. A sidetone of the ANI number transmitted will also be heard through the speaker.

Store Group Two Settings

Once each function 1-5 is set as desired, you can store the changes, discard the changes, or disable all 5 functions.

Press the [CLR] key to disable all Group Two functions (steady).

Press the [ENT] key to store new Group Two settings into memory and advance to the next field.

Press the [FCN] key to advance to the next field without saving changes.

Channel 0 Group Three Functions

```
PRG
3--12345
```

After Group Two functions are set, the display will show 'PRG 3-12345' for Group Three functions. As with Group One and Group Two functions, the enabled function numbers will flash. The disabled functions remain steady.

Option 3-1 & 2: Reserved for future enhancements.

Option 3-3: Backlight On Display Change

```
PRG
3--12345
```

When function 3 is enabled (flashing), the display backlight will illuminate each time the display receives input. This includes displayed changes in the selected channel or scan channel, and the PR, TX, and SCN annunciators. The display will not illuminate if backlight duration is set to LITE OFF. See "Backlight Duration" on the next page.

Option 3-4: Backlight On Key Press
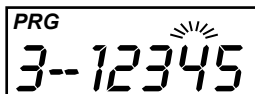
```
PRG
3--12345
```

When function 4 is enabled (flashing), the display backlight will illuminate each time a key is pressed, even if pressing the key has no other effect.

The display will not illuminate if backlight duration is set to LITE OFF. See "Backlight Duration".

Option 3-5: Alphanumeric/Numeric Display Mode

```
PRG
3--12345
```

When function 5 is enabled (flashing), the display operates in Alphanumeric Mode, enabling the display of channel labels. When disabled (steady), the display operates in Numeric Display Mode. This mode displays channel numbers instead of labels.

Store Group Three Settings

Once each function 1-5 is set as desired, you can store the changes, discard the changes, or disable all 5 functions.

Press the [CLR] key to disable all Group Three functions (steady).

Press the [ENT] key to store new Group Three settings into memory and advance to the next field.

Press the [FCN] key to advance to the next field without saving changes.

Backlight Duration

```
PRG
LITE OFF
```

After Group Three functions, the display will show the current backlight duration setting. Available settings are LITE OFF, 1-second increments up to 6 SEC ON and LITE ON.

```
PRG
1 SEC ON
```

NOTE: Excessive battery drain will result if LITE ON is set and used for extended periods of time.

```
PRG
LITE ON
```

If no change is needed, press the [FCN] key to advance to the next field.

Press the [CLR] key to set backlight duration to zero and display LITE OFF.

Press the [PRI] key to increase backlight duration by 1 second increments from LITE OFF, to 1 SEC ON, 2, 3, 4, 5, 6 SEC ON, LITE ON (illumination remains on constantly) then back to LITE OFF.

Press the [ENT] key to store changes and advance to the next field.

Press the [FCN] key to advance to the next field without storing changes.

Group Labels

```
PRG
GROUP 1
```

After the backlight duration setting, the display will show the current label for the channel group. Each channel group can have a label of up to eight characters or spaces. The characters can include 0-9, A-Z, -, *, $, /, +, %, \, |, _, <, >, h, or blank.

If no change is needed, press the [FCN] key to go back to the starting point for Channel 0 settings.

Press the [CLR] key to erase the current label. Press the [CLR] key a second time to restore the current label.

Changing The Group Label

Press the [CLR] key. The display becomes blank.

Press number keys to enter 0-9 in positions 1-7. The digits start in position 7, then move left.

Press the [#] key to toggle a decimal on or off to the right of the character in position 7.

The decimal moves left with the number in position 7 as new numbers are entered.

Use the following steps to enter a number in position 8 or characters in positions 1-8:

a. Press the [PRI] key repeatedly to cycle through characters 0-9, A-Z, -, *, $, /, +, %, \, |, _, <, >, h, blank, then back to the start again.

If you pass the desired character, press the [PRI] key repeatedly until you return to the start and reach that character again.

b. Press the [FCN] key to shift the display left by one position, leaving position 8 blank.

c. Press the [PRI] key repeatedly to enter the next character, or press the [FCN] key a second time to enter a blank space.

d. To abandon changes, press the [CLR] key, restoring the original label.

Press the [ENT] key to store changes and go back to the starting point for Channel 0 settings.

Review Channel 0 Values
Press the [FCN] key repeatedly to display each value in Channel 0, and then return to the Channel 0 starting point.

CHANNEL SETTINGS

At the starting point for Channel 0, the display shows 'PRG CH 00.' At this point, a channel number can now be pressed to allow access to per-channel variables such as frequencies and Code Guard values for that channel.
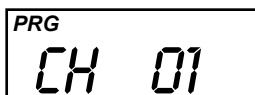
```
PRG
CH   01
```

Press [1] and the display will show 'PRG CH 01.' This is the starting point for entering channel 1 values.

Alternatively, pressing [PRI] will advance the channels one at a time.

Channel Bandwidth
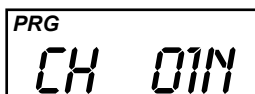
```
PRG
CH   01N
```

At this point, pressing the [#] key will toggle the channel's bandwidth setting. An 'N' will appear to the right of the channel number when the channel is set for 12.5/15 kHz channel bandwidth using the narrow band receiver filter. When there is no 'N' the channel is set for 25/30 kHz channel bandwidth.

Receive Frequency

```
PRG   RX
151.62500
```
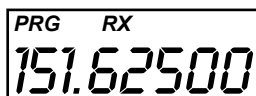
Press the [FCN] key and the upper part of the display will show 'PRG RX.' This is the receive frequency for channel 1 (in MHz).

If the displayed frequency is correct, press the [FCN] key to advance to the next field.

If a new frequency is desired, press the [CLR] key followed by the digits of the desired frequency. Then press the [ENT] key to store this frequency and automatically advance to the next field.

Receive Mode (Digital Models Only)

```
PRG   RX
MODE -- X
```
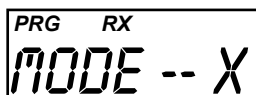
After the receive frequency is set, the upper part of the display will show 'PRG RX', and the lower part of the display will show 'Mode-X', where X can be 'A' for Analog Mode, 'D' for Digital Mode, or 'M' for Mixed Mode.

If the mode is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

Receive Analog Code Guard

PRG	RX	CG
	000.0	

The next field is the Analog Code Guard value for Channel 1 receive. This value is only used if the receive mode selected was Analog or Mixed, or if User Code Guard is activated. The upper display will show 'PRG RX CG' and the lower part of the display will show the programmed guard.

NOTE: 0.0 indicates carrier squelch operation (no Code Guard).

If the displayed value is correct, press the [FCN] key to advance to the next field.

If a new value is desired, press the [CLR] key to reset the display to 0.0. Press the number keys 0 thru 9 to enter a CTCSS Code Guard value. See "CTCSS Code Guard Values" on page 51 of this manual. Press the [ENT] key to store the new value and automatically advance to the next field.

PRG	RX	CG
	0131--	

To enter a CDCSS Code Guard value press the [#] key, causing the letter 'D' to appear followed by three zeros. Enter the desired code using keys 0 thru 7 (keys 8 & 9 do not respond). See "CDCSS Code Guard Values" on page 51 of this manual. Pressing the [PRI] key after the three-digit code has been entered allows the code to be inverted (a dash appears to the right of the number). When the displayed value is correct, press the [ENT] key to store the Code Guard value and automatically advance to the next field.

Receive NAC (Digital Models Only)

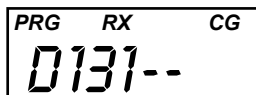| PRG	RX	ID CG
	NAC XXXX	

The next field is the Network Access Code (NAC) for Channel 1 receive. This value is only used if the receive mode selected was Digital or Mixed, or if User Code Guard is activated. The upper part of the display will show 'PRG RX ID CG'. The lower part of the display will show 'NACXXXX' where XXXX is the Network Access Code in decimal.

If the NAC is correct, press the [FCN] key to advance to the next field.

If a new NAC is desired, press the [CLR] key followed by the digits of the desired NAC. Then press the [ENT] key to store this NAC and automatically advance to the next field.

```
PRG    RX    ID CG
NAC $A2F
```
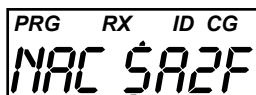
To view and/or program the NAC as a hexadecimal number, press and hold the [#] key,

If a new NAC is desired, press the [CLR] key followed by the digits of the desired NAC. If the NAC requires A, B, C, D, E or F, press the [9] key, then press the [PRI] key to cycle through the letters. Once the desired letter is shown use the number keys to select the next digit.

The digital equivalent of carrier squelch is achieved by programming the hexadecimal receive NAC to $F7E. The radio will unmute when a digital signal with any NAC is detected.

Then press the [ENT] key to store this NAC and automatically advance to the next field.

Squelch Mode (Digital Models Only)

```
PRG    RX    ID
SQL -- XXX
```
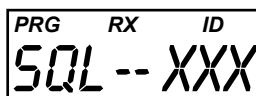
The next field is the Receiver Squelch Mode for Channel 1. This setting is only used if the receive mode selected was Digital or Mixed, or if User Code Guard is activated. The upper part of the display will show 'PRG RX ID'.

The lower part of the display will show 'SQL-XXX' where XXX is 'NRM' for normal squelch or 'SEL' for selective squelch.

Normal squelch opens on a matching NAC and any Talk Group ID or Individual Unit ID. Selective squelch requires the correct NAC and the correct Talk Group ID, and for Unit-to-Unit calls, requires a matching Individual ID.

If the Squelch Mode is correct, press the [FCN] key to advance to the next field.

If a different Squelch Mode is desired, press the [PRI] key to toggle the setting. Then press the [ENT] key to store this setting and automatically advance to the next field.

Transmit Frequency

```
PRG  TX
151.62500
```
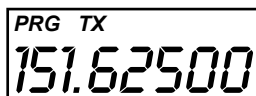
The upper part of the display will show 'PRG TX.' This is the transmitter frequency for Channel 1.

If it is correct, press the [FCN] key to advance to the next field.

If a new frequency is desired, press the [CLR] key followed by the digits of the desired frequency. Then press the [ENT] key to store this frequency and automatically advance to the next field.

If you want to operate this channel as a receive-only channel, press the [CLR] key (setting the display to 0.0) followed by the [ENT] key. The transmitter will be locked off for this channel.

Transmit Mode (Digital Models Only)

```
PRG  TX
MODE-- X
```

After the transmit frequency is set, the upper part of the display will show 'PRG TX', and the lower part of the display will show 'Mode-X', where X can be 'A' for Analog Mode, 'D' for Digital Mode, or 'M' or Mixed Mode.

If the mode is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

## Transmit Analog Code Guard

```
PRG  TX      CG
000.0
```

The next field is the Analog Code Guard value for Channel 1 transmit. This value is only used if the transmit mode selected was Analog or Mixed, or when User Code Guard is activated. The upper display will show 'PRG TX CG' and the lower part of the display will show the programmed guard.

If the displayed value is correct, press the [FCN] key to advance to the next field.

If a new value is desired, press the [CLR] key to reset the display to 0.0. Press the number keys 0 thru 9 to enter a CTCSS Code Guard

---

value. See "CTCSS Code Guard Values" on page 51 of this manual. Press the [ENT] key to store the new value and automatically advance to the next field.

```
PRG TX        CG
 D 131--
```

To enter a CDCSS Code Guard value press the [#] key, causing the letter 'D' to appear followed by three zeros. Enter the desired code using keys 0 thru 7 (keys 8 & 9 do not respond). See "CDCSS Code Guard

Values" on page 51 of this manual. Pressing the [PRI] key after the three-digit code has been entered allows the code to be inverted (a dash appears to the right of the number). When the displayed value is correct, press the [ENT] key to store the Code Guard value and automatically advance to the next field.

Transmit NAC (Digital Models Only)
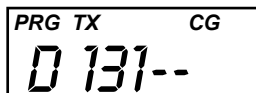
```
PRG      TX   ID CG
NAC XXXX
```

The next field is the Network Access Code (NAC) for Channel 1 transmit. This value is only used if the transmit mode selected was Digital or Mixed, or if User Code Guard is activated. The upper part of the display will

show 'PRG TX ID CG'. The lower part of the display will show 'NACXXXX' where XXXX is the Network Access Code in decimal.

If the NAC is correct, press the [FCN] key to advance to the next field.

If a new NAC is desired, press the [CLR] key followed by the digits of the desired NAC. Then press the [ENT] key to store this NAC and automatically advance to the next field.

```
PRG      RX   ID CG
NAC 5A2F
```
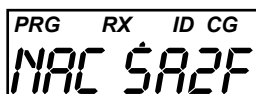
To view and/or program the NAC as a hexadecimal number, press and hold the [#] key,

If a new NAC is desired, press the [CLR] key followed by the digits of the desired NAC. If the NAC requires A, B, C, D, E or F, press the [9] key, then press the [PRI] key to cycle through the letters. Once the desired letter is shown use the number keys to select the next digit.

Then press the [ENT] key to store this NAC and automatically advance to the next field.

Talk Group ID (Digital Models Only)

```
PRG    TX    ID ☎
TG XXXXX
```

The next field is the Talk Group ID. This value is only used if the transmit mode selected was Digital or Mixed, or if User Code Guard is activated. The upper part of the display will show 'PRG TX ID' and the phone icon. The lower part of the display will show 'TGXXXXX' where XXXXX is the Talk Group ID.

If the displayed value is correct, press the [FCN] key to advance to the next field.

If you wish to change it, press the [CLR] key followed by the digits for the new TGID, then [ENT] to store the new value and automatically advance to the next field.

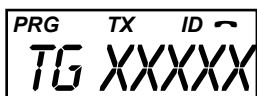## Secure Selection (Encrypted Radios Only)

```
PRG    TX    ID
SEC XXX
```
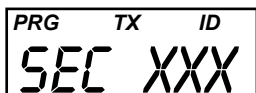
In radios equipped with DES/AES encryption, the next field is the Secure Transmit setting. This selection will not appear in radios that do not have the encryption option.

The upper line of the display will show 'PRG TX ID', and the lower part of the display will show 'SEC-XXX', where XXX can be 'CLR' to always transmit a clear signal, 'ENC' to always transmit an encrypted signal or 'SW' where the transmission can be selected via a programmed switch.

NOTE: To use the 'SW' selection one of the radios toggle switches or [FCN] menu selection must be programmed with for the 'Transmit Secure' selection. These settings require the use of the PC Radio Editor LAA0744X.

If the mode is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

Encryption Key (Encrypted Radios Only)

```
PRG    TX    ID
KEY 01
```

In radios equipped with DES/AES encryption, the next field is the Encryption Key setting. This selection will not appear in radios that do not have the encryption option.

The upper line of the display will show 'PRG TX ID', and the lower part of the display will show 'KEY-XX', where XX can be '01' to '32'. This is the encryption key assigned to the channel.

NOTE: Available encryption keys must be loaded into the radio using a compatible keyloader and enabled via the PC Radio Editor LAA0744X.

If the key is correct, press the [FCN] key to advance to the next field.

If a new key is desired, press the [PRI] key to increase the key number by 1 or use the keypad numbers to select the deired key number. Press [ENT] to store the new mode and automatically advance to the next field.

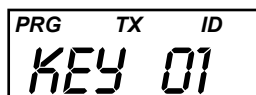## Key Selection Setting (Encrypted Digital Radios Only)

PRG   TX   ID

KEY -- XXX
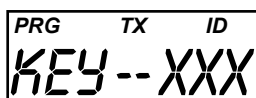
In radios equipped with DES/AES encryption, the next field is the Encryption Key Selection setting. This selection will not appear in radios that do not have the encryption option.

The upper line of the display will show 'PRG TX ID', and the lower part of the display will show 'KEY-XXX', where XXX can be 'SEL', for selectable or 'LCK', for locked.

If the selection is set to Selectable, the encryption key can be selected via the radio's keypad. If the selection is set to Locked, this channel will always use the encryption key selected in the previous setting.

For information on selectable key operation refer to your radio's owner/user manual.

If this setting is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

Channel Label

PRG

LABEL

The last field is the channel label.

If this label is correct, press the [FCN] key to proceed to the entry point.

If a new channel label is desired, follow the instructions under "Group Labels" on page 13 of this manual.

Review Channel Settings

After the channel label is set, the display will return to the Channel 1 starting point. If you wish to review the Channel 1 settings, subsequent pressing of the [FCN] or [ENT] key will show each value and then return to the Channel 1 starting point.

Program Another Channel
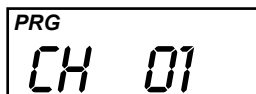
At the starting point for Channel 1, the display will show 'PRG CH 01'. Press the number keys for another channel number to gain access to the frequencies, etc. for that channel. Each channel is then programmed using the same steps described for Channel

Exit Programming Mode
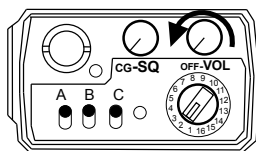
Rotate the OFF-VOL knob counterclockwise to the OFF position.

The radio will be in normal Operating Mode the next time it is turned on.

Command (CMD) Radio Keypad Programming

Keypad programming selections for Command portable radios, models GPH-CMD and DPH-CMD, are divided into three sections, Group Parameters, Channel Parameters and Global Parameters.

The following items are available in these sections:

Group Parameters (CH 00)

Group Scan List Selection	Group Label

Channel Parameters

Bandwidth	TX Frequency
RX Frequency	TX Mode*
RX Mode*	TX Code Guard
RX Guard	TX NAC*
RX NAC*	Talk Group ID*
Squelch Mode*	Channel Label

*Digital Models Only

Global Parameters (GRP 00)

Keypad Programming Password	TX Time-Out Timer
ANI ID	Scan Delay
PRI-1 Channel	Busy Channel
PRI-1 Group	ANI/DTMF
PRI-2 Channel	Backlight Triggers
PRI-2 Group	Backlight Duration
TX on PRI-1	Silent Mode
PRI-1 Lock	Battery Saver
Scan List Lock	

NOTE: Keypad Programming Mode cannot be entered when the radio is operating in the Command Group. If the display flashes "CMND GRP" when you try to enter Programming Mode, release the master switch and [FCN] key, and select a different group.

Navigation

Selecting Group Parameters
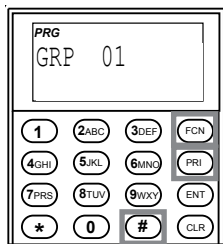
When Programming Mode is entered, programming starts (after password entry) with the Group Parameters (CH 00) for the currently selected group.

To edit another Channel Group (GRP 01 - 25), press and hold the [#] key at any CH prompt to get the group selection prompt.

Enter the number of the group to be programmed, or press the [PRI] key to increment to the desired group. Once the desired group is selected, press [FCN] to access the data.

Use the [FCN] key to cycle through the data fields.

Selecting Channel Parameters
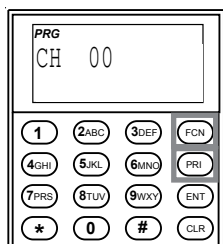
From the "CH 00" position, enter the number of the channel to be programmed, or press the [PRI] key to increment to the desired channel. Once the desired channel is selected, press [FCN] to access the data.

Use the [FCN] key to cycle through the data fields.

Selecting Global Parameters
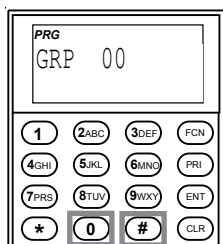
From the "CH XX" position, press and hold the [#] to get the "GRP XX" prompt and press "0". The display will show "GRP 00".

Use the [FCN] key to cycle through the Global data fields.

Editing Parameters

```
PRG TX
 $293
TX NAC
```
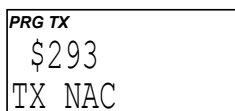
In programming mode, when a parameter is selected for programming, the bottom line of the display shows the parameter, The top line shows the currently programmed value.

```
PRG
151.62500
RX FREQUENCY
```
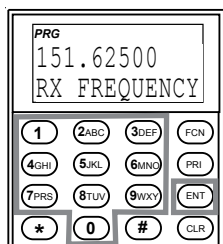

Parameters with numeric information, such as frequencies and Code Guards, use the keypad numbers for data selection. Prior to changing most numeric settings, the data must first be cleared by pressing the [CLR] key.

Data must be set by pressing the [ENT] key.

Pressing the [FCN] button will move to the next parameter without making any change.

```
PRG
CHANNEL MAIN
PRI-1 CHAN
```
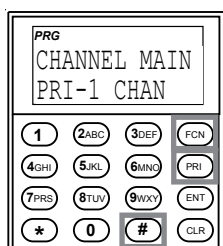

Parameters with multiple choice selections, such as, Scan List Lock and Busy Channel, use the [PRI] button to cycle through the available settings.

CMD Group Parameters (CH 00)

To edit a Channel Group (GRP 01 - 25), press and hold the [#] key at any CH prompt to get the group selection prompt.

Enter the number of the group to be programmed, or press the [PRI] key to increment to the desired group. Once the desired group is selected, press [FCN] to access the data.

Group Options Group One: 1-12345678

Option 1-8: Group Scan List
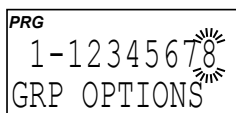
```
PRG
 1-12345678
GRP OPTIONS
```

When an option is enabled, the corresponding number in the display will flash. When the option is disabled the number is steady. If you wish to change the option from enabled to disabled or vice versa, press the number key corresponding to that option.

Option numbers 1-7 are inactive.

Option 8 adds the group being programmed to the Group Scan List

When Option 8 is enabled (flashing) the current group will be scanned when the radio is operating in Group Scan Mode.

Press the [ENT] key to store the group options settings into memory and advance to the next field.

Group Label

```
PRG
 LABEL 1
Group Label
```
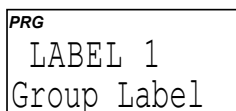
Each Channel Group can have a label of up to twelve characters or spaces.

The characters can include 0-9, A-Z, –, -, ., *, +, <, >, /, \, |, $, %, h, or blank.

If no change is needed, press the [FCN] key to go back to the starting point for Channel 0 settings.

Changing The Group Label

Labels are edited from left to right. Pressing the [PRI] key moves the cursor to the next character. Pressing and holding the [PRI] key backspaces to the previous character.

The number keys 2 – 9 allow for entry of the letters printed on the respective keys. For example, the first press of the [2] key enters the letter A, the second press enters a B, the third press enters a C, and the fourth press enters a 2. Keys 0 and 1 can be used to enter the following characters:

0: 0, space, –, _, ., *, +

1: 1, <, >, /, \, |, $, %, h

Press the [ENT] key to store changes and go back to the starting point for Channel 0 settings.

CMD Global Parameter Options (GRP 00)

From the "CH XX" position, press and hold the [#] to get the "GRP XX" prompt and press "0". The display will show "GRP 00".

Use the [FCN] key to cycle through the programmable functions.

Keypad Editing Password

```
PRG
EDIT- 000000
PASSWORD
```
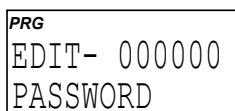
The current keypad programming 'PASSWORD' is displayed.

If no change is needed, press the [FCN] key to advance to the next field.

A new password can be entered by pressing number keys.

Press [ENT] to store the new password and advance to the next field.

Global Option Groups 1 and 2

NOTE: Global Option Groups One and Two are for GPH-CMD radios only. On DPH-CMD digital radios, these items are accessed individually by pressing the [FCN] button.

```
PRG
 1-12345678
GBL OPTIONS
```
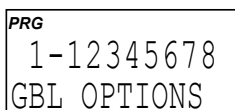
These are groups of eight individual options that can be enabled or disabled.

When an Option is enabled, the corresponding number in the display will flash. When the Option is disabled, the number is steady. If you wish to change the Option from enabled to disabled or vice versa, press the number key corresponding to that Option.

Global Options Group One
Option 1-1: Battery Saver Inhibit

```
PRG
 1-12345678
GBL OPTIONS
```
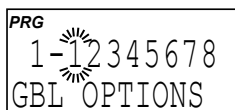
When Option 1 is enabled (flashing), the Battery Saver is turned off. The Battery Saver should be turned off only for getting proper voltage readings during service or for systems requiring fast squelch attack time.

NOTE: BK Radio current drain and battery life specifications are based on performance with the battery saver on.

Option 1-2: Reserved For Future Options

Option 1-3: Transmit On Priority 1

```
PRG
 1-12345678
GBL OPTIONS
```
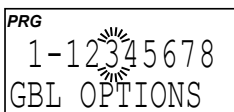
When Option 3 is enabled (flashing), transmissions will occur on PR1 (if PR1 isn't programmed OFF) when operating in Single or Dual Priority Scan Mode.

Option 1-4: Priority 1 Lock

```
PRG
 1-12345678
GBL OPTIONS
```

When Option 4 is enabled (flashing) the user will not be able to change the designation of the Priority 1 Channel by selecting a channel and pressing the [PRI] key.

When Option 4 is disabled (steady) the user will be able to change the channel that is designated as Priority 1 Channel.

Option 1-5: Scan List Lock
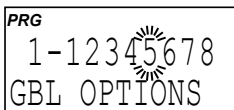
```
PRG
 1-12345678
GBL OPTIONS
```

When Option 5 is enabled (flashing), the user will not be able to use the [ENT] and [CLR] keys to add channels to and delete channels from the Scan List.

When disabled (steady), the user can alter the Scan List using the [ENT] and [CLR] keys.

Option 1-6: Backlight On Display Change

```
PRG
 1-12345678
GBL OPTIONS
```
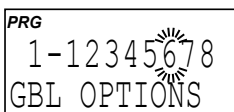
When Option 6 is enabled (flashing), the display backlight will illuminate each time the display receives input. This includes displayed changes in the selected channel or scan channel, and the PR, TX, and SCN annunciators. The display will not illuminate if Backlight Duration is set to LITE OFF. See "Backlight Duration".

Option 1-7: Backlight On Key Press

```
PRG
 1-12345678
GBL OPTIONS
```
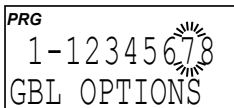
When 0ption 7 is enabled (flashing), the display backlight will illuminate each time a key is pressed, even if pressing the key has no other effect. The display will not illuminate if backlight duration is set to LITE OFF. See "Backlight Duration".

Option 1-8: Silent Mode

```
PRG
 1-12345678
GBL OPTIONS
```
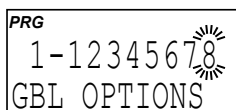
When Option 8 is enabled (flashing), all beeps, tones, and alerts from the radio's speaker are silenced. Only normal audio communication between radio users will be heard.

Store Global Options Settings

Once each option is set as desired, you can store the changes, discard the changes, or disable all displayed options.

Press the [CLR] key to disable all displayed options (steady).

Press the [ENT] key to store new displayed options settings into memory and advance to the next field.

Press the [FCN] key to advance to the next field without saving changes.

Global Options Group Two
Option 2-1: Reserved For Future Options

Options 2-2 & 3: Busy Channel Operation

```
PRG
 2-12345678
GBL OPTIONS
```

Options two and three are used to set Busy Channel operation. There are three types of busy channel operation available.

Busy Channel Modes include:

Busy Channel Indicator - The yellow LED illuminates when a signal is received on the channel selected, with or without the programmed receive Code Guard setting.

Busy Channel Lockout - The yellow LED illuminates and the transmitter PTT is disabled when a signal is received without the programmed receive Code Guard setting.

Busy Channel Override - This option is similar to Busy Channel Lockout except the transmitter PTT can be activated by rotating the Squelch knob clockwise off the Code Guard detent.

To set Busy Channel operation, use the following chart:

Operation	Option 2	Option 3
Indication	Disable (Steady)	Enable (Flashing)
Lockout	Enable (Flashing)	Enable (Flashing)
Override	Enable (Flashing)	Disable (Steady)

Options 2-4 & 5: ANI/DTMF Mode
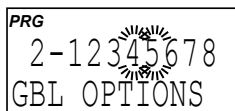
```
PRG
2-123 45678
GBL OPTIONS
```

When Option 4 is enabled (flashing), the ANI ID number will be transmitted (as a DTMF tone sequence) with each press of the PTT switch. See "Automatic Numeric Identification (ANI)" on the next page for instructions on setting the ANI number.

When Option 5 is enabled (flashing), the keypad becomes active for manual DTMF operation.

When Options 4 and 5 are both enabled (flashing), the ANI tone sequence will be transmitted only after the [ENT] key is pressed while the transmit PTT switch is activated. A sidetone of the ANI number transmitted will also be heard through the speaker.

Options 2-6, 7 and 8: Reserved For Future Options

Once each option is set as desired, you can store the changes, discard the changes, or disable all displayed options.

Press the [CLR] key to disable all displayed options (steady).

Press the [ENT] key to store new displayed options settings into memory and advance to the next field.

Press the [FCN] key to advance to the next field without saving changes.

Automatic Number Identification ID (ANI)

```
PRG
ANI  1234567
ANI ID NUM
```
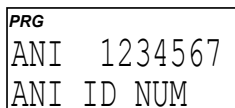
This field is the 'ANI ID' number (as many as seven digits may be used). The ID number can be used for either radio management or transmitted as a DTMF tone burst for ANI purposes. The ANI can be enabled or disabled. See "ANI/DTMF Mode".

If no change is needed for the ID number, press the [FCN] key to advance to the next field.

A new number can be entered by pressing number keys. The digits will appear at the right of display and move to the left.

Press the [ENT] key to store the new ID number and advance to the next section.

The existing ID number can be incremented one digit by pressing the [PRI] key.

Press the [ENT] key to store the new ID number and advance to the next field.

Priority 1 Channel

```
PRG
CHANNEL XX
PRI-1 CHAN
```

This field is the 'Priority 1 Channel'. Any one of the 500 channels in the radios can be designated as the Priority 1 channel, or PRI-1 can be tied to the Channel Selector knob, or programmed OFF. If the radio is programmed to transmit on the first priority channel, transmissions will occur on PRI-1, if PRI-1 isn't programmed OFF, when operating in Single or Dual Priority Scan Mode.

If PRI-1 is a fixed channel and the [PRI] key on the keypad is not locked out during normal radio operation, the user can select a new group, if necessary, move the channel selector to a new channel and press the [PRI] key to choose a new PRI-1 channel.

Press the [PRI] key to cycle through the priority channel options.

Setting the channel to MAIN ties the PRI-1 channel to the Channel Selector knob.

Press the [ENT] key to store the new priority channel and advance to the next field.

Priority 1 Group

```
PRG
GROUP   XX
PRI-1 GROUP
```

If the Priority 1 channel has been programmed as one of the 500 channels in the radio, the group where the channel resides must be designated. If PRI-1 has been tied to the Channel Selector knob (set to MAIN), or programmed OFF, the Priority Group field is skipped.

Press the [PRI] key to cycle through the priority group options, or press number keys to enter a group.

Press the [ENT] key to store the new priority group and advance to the next field.

Priority 2 Channel

```
PRG
CHANNEL XX
PRI-2 CHAN
```

This field is the 'Priority 2 Channel'. Any one of the 500 channels in the radios can be designated as the Priority 2 channel, or PRI-2 can be tied to the Channel Selector knob, or programmed OFF.

The PRI-2 channel cannot be altered during normal radio operation.

Press the [PRI] key to cycle through the priority channel options.

Setting the channel to MAIN ties the PRI-2 channel to the Channel Selector knob.

Press the [ENT] key to store the new priority channel and advance to the next field.

Priority 2 Group

```
PRG
GROUP   XX
PRI-2 GROUP
```

If the Priority 2 channel has been programmed as one of the 500 channels in the radio, the group where the channel resides must be designated. If PRI-2 has been tied to the Channel Selector knob (set to MAIN), or programmed OFF, the Priority Group field is skipped.

Press the [PRI] key to cycle through the priority group options, or press number keys to enter a group.

Press the [ENT] key to store the new priority group and advance to the next field.

Transmit on Priority 1

```
PRG
ON
TX ON PRI-1
```

This step applies to DPH-CMD only. Refer to "Option Group 1 - 5" for GPH-CMD.

When TX ON PRI-1 is ON, transmissions will occur on PRI-1 (if PRI-1 isn't programmed OFF) when operating in Single or Dual Priority Scan Mode. To simulate Old-Style Priority Mode C, Transmit on Priority 1 must be enabled.

Press [PRI] to toggle the option on or off.

Press [ENT] to store the setting and advance to the next field.

Priority 1 Lock

```
PRG
USER SELECT
PRI-1 SELECT
```

This step applies to DPH-CMD only. Refer to "Option Group 1 - 4" for GPH-CMD.

When PRI-1 SELECTION is set to LOCKED OUT, the user will not be able to change the designation of the Priority 1 Channel by selecting a channel and pressing the [PRI] key.

When PRI-1 SELECTION is set to USER SELECT the user will be able to change the channel that is designated as Priority 1 Channel.

Press [PRI] to toggle the option on or off.

Press [ENT] to store the setting and advance to the next field.

Scan List Lock

```
PRG
USER SELECT
SCAN LIST
```

This step applies to DPH-CMD only. Refer to "Option Group 1 - 5" for GPH-CMD.

When SCAN LIST SELECTION is set to LOCKED OUT, the user will not be able to use the [ENT] and [CLR] keys to add channels to and delete channels from the Scan List.

When SCAN LIST SELECTION is set to USER SELECT, the user can alter the Scan List using the [ENT] and [CLR] keys.

Press [PRI] to toggle the option on or off.

Press [ENT] to store the setting and advance to the next field.

Transmit Time-out Timer

```
PRG
 60  SEC
TX TIMEOUT
```

This field is the 'Transmitter Time-Out Timer' setting. 0 SEC means the Time-Out Timer is disabled.

Press the [PRI] key to increase the Time-Out Timer duration by 15 seconds, with a maximum of 225 seconds (3 minutes, 45 seconds). Press the [PRI] key again to change the duration from 225 seconds to zero.

Press the [CLR] key to set the Time-Out Timer duration to zero.

Press the [ENT] key to store the changed setting and advance to the next field.

Press the [FCN] key to advance to the next field if no change is needed.

Scan Delay

```
PRG
 2.5 SEC
SCAN DELAY
```

This field is the 'SCAN DELAY' time.

Press the [PRI] key to increase the scan delay time by .5 seconds, up to 7.5 seconds. Press the [PRI] key again to change the time from 7.5 seconds to 0.

Press the [CLR] key to reset the scan delay time to 0.

Press the [ENT] key to store the changed setting and advance to the next field.

Press the [FCN] key to advance to the next field if no change is needed.

Busy Channel Operation

```
PRG
LOCKOUT
BUSY CHANNEL
```

This step applies to DPH-CMD only. Refer to "Option Group 2 - 2/3" for GPH-CMD.

There are three types of busy channel operation available.

Busy Channel Modes include:

Busy Channel Indicator - The yellow LED illuminates when a signal is received on the channel selected, with or without the programmed receive Channel Guard setting.

Busy Channel Lockout - The yellow LED illuminates and the transmitter PTT is disabled when a signal is received without the programmed receive Channel Guard setting.

Busy Channel Override - This option is similar to Busy Channel Lockout except the transmitter PTT can be activated by rotating the Squelch knob clockwise off the Channel Guard detent.

Press the [PRI] key to cycle through the available settings.

Press the [ENT] key to store the changed setting and advance to the next field.

Press the [FCN] key to advance to the next field if no change is needed.

ANI/DTMF Operation

```
PRG
DTMF ONLY
ANI/DTMF
```

This step applies to DPH-CMD only. Refer to "Option Group 2 - 4/5" for GPH-CMD.

When ANI/DTMF mode is set to ANI ONLY, the ANI ID number will be transmitted (as a DTMF tone sequence) with each press of the PTT switch. See "Automatic Numeric Identification (ANI)" for instructions on setting the ANI number.

When ANI/DTMF mode is set to DTMF ONLY, the keypad becomes active for manual DTMF operation.

When ANI/DTMF mode is set to ANI AND DTMF, the ANI tone sequence will be transmitted only after the [ENT] key is pressed while the transmit PTT switch is activated. A sidetone of the ANI number transmitted will also be heard through the speaker.

Press the [PRI] key to cycle through the available settings.

Press the [ENT] key to store the changed setting and advance to the next field.

Backlight Option

```
PRG
KEY PRESS
BACKLIGHT
```

This step applies to DPH-CMD only. Refer to "Option Group 2 - 7/8" for GPH-CMD.

The backlight can be triggered by different events.

When BACKLIGHT is set to trigger on KEY PRESS, the display backlight will illuminate each time a key is pressed, even if pressing the key has no other effect. The display will not illuminate if backlight duration is set to LITE OFF. See "Backlight Duration" below.

When BACKLIGHT is set to trigger on DSPLY CHNG, the display backlight will illuminate each time the display receives input. This includes displayed changes in the selected channel or scan channel, and the PR, TX, and SCN annunciators. The display will not illuminate if Backlight Duration is set to LITE OFF. See "Backlight Duration" below.

The BACKLIGHT can also be set to trigger on KEYPRESS OR DISPLAY CHANGE.

Press the [PRI] key to cycle through the available settings.

Press the [ENT] key to store the setting and advance to the next field.

Press the [FCN] key to advance to the next field if no change is needed.

Backlight Duration

```
PRG
 2  SEC
BL DURATION
```

Backlight Duration can be set for LITE OFF, 1 SEC ON, 1- second increments up to 6 SEC ON, and LITE ON.

NOTE: Excessive battery drain will result if LITE ON is set and used for extended periods of time.

If no change is needed, press the [FCN] key to advance to the next field.

Press the [CLR] key to set backlight duration to zero and display LITE OFF.

Press the [PRI] key to increase backlight duration by 1 second increments from LITE OFF, to 1 SEC ON, 2, 3, 4, 5, 6 SEC ON, LITE ON (illumination remains on constantly) then back to LITE OFF.

Press the [ENT] key to store changes and advance to the next field.

Press the [FCN] key to advance to the next field without storing changes.

Silent Mode

```
PRG
ON
SILENT MODE
```

This step applies to DPH-CMD only.
Silent Mode is not available in the GPH-CMD.

When SILENT MODE is set to ON, all beeps, tones, and alerts from the radio's speaker are silenced. Only normal audio communication between radio users will be heard.

Press [PRI] to toggle the option on or off.

Press [ENT] to store the setting and advance to the next field.

Battery Save

```
PRG
ON
BATTERY SAV
```

This step applies to DPH-CMD only.
Refer to "Option Group 1 - 1" for GPH-CMD.

The Battery Saver should be turned off only for getting proper voltage readings during service or for systems requiring fast squelch attack time.

NOTE: BK Radio current drain and battery life specifications are based on performance with the battery saver on.
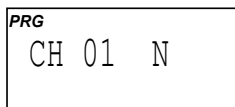
Press [PRI] to toggle the option on or off.

Press [ENT] to store the setting and advance to the next field.

CHANNEL Parameters

From the "CH 00" position, enter the number of the channel to be programmed, or press the [PRI] key to increment to the desired channel. Once the desired channel is selected, press [FCN] to access the data. See "Selecting Channel Parameters".
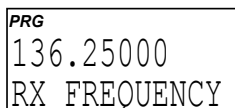
Channel Bandwidth

```
PRG
CH 01  N
```

Press '1' and the display will show 'PRG CH 01'. This is the starting point for entering channel 1 values.

At this point, pressing the [#] key will toggle the channel's bandwidth setting. An 'N' will appear to the right of the channel number when the channel is set for 12.5/15 kHz channel spacing using the narrow band receiver filter. A 'W' appears when the channel is set for 25/30 kHz channel spacing using the wide band receiver filter.

Receive Frequency
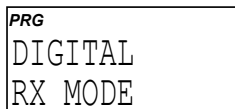
```
PRG
136.25000
RX FREQUENCY
```

Press the [FCN] key to move to the 'RX FREQUENCY' field. This is the receive frequency for channel 1 (in MHz).

If the displayed frequency is correct, press the [FCN] key to advance to the next field.

If a new frequency is desired, press the [CLR] key followed by the digits of the desired frequency. Then press the [ENT] key to store this frequency and automatically advance to the next field.

Receive Mode (Digital models only)

```
PRG
DIGITAL
RX MODE
```

This field is the receive mode for channel 1. Available options are Analog, Digital, and Mixed.

If the mode is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

Receive Code Guard

```
PRG
111.0
RX GUARD
```

This field is the Analog Channel Guard value for Channel 1 receive.

NOTE: 0.0 indicates carrier squelch operation (no Channel Guard).

If the displayed value is correct, press the [FCN] key to advance to the next field.

If a new value is desired, press the number keys 0 thru 9 to enter a Tone Channel Guard value. See "Tone Channel Guard Values" in section 2.3.

To enter a Digital Channel Guard value press the [#] key, causing the letter 'D' to appear followed by three zeros. Enter the desired digital code using keys 0 thru 7 (keys 8 & 9 do not respond). See "Digital Channel Guard Values".

Pressing the [PRI] key after the three-digit code has been entered allows the digital code to be inverted. When the displayed value is correct, press the [ENT] key to store the Channel Guard value and automatically advance to the next field.

Receive NAC (Digital models only)

```
PRG
$293
RX NAC
```

```
PRG
00659
RX NAC
```

This field is the Network Access Code (NAC) for Channel 1 receive. This value is only used if the receive mode selected was Digital or Mixed, or if User Channel Guard is activated.

To see the NAC displayed in hexadecimal format, press and hold the [#] key.

To return to the decimal display, press and hold the [#] key again.

If the NAC is correct, press the [FCN] key to advance to the next field.

If a new NAC is desired, press the [CLR] key. In decimal mode, valid entries are 0 – 4095.

The digital equivalent of carrier squelch is achieved by programming the decimal receive NAC to 3966. The radio will unmute when a digital signal with any NAC is detected.

In hexadecimal mode, valid entries are $0 - $FFF.

```
PRG
$F7E
RX NAC
```

To enter hexadecimal characters A - F:

Each long press of the [2] key toggles the right most character from A to B to C, then back to A.

Each long press of the [3] key toggles the right most character from D to E to F, then back to D.

To enter a 'letter' after another 'letter' or number, first enter any number, then toggle it with long [2] or [3] key presses.

The digital equivalent of carrier squelch is achieved by programming the hexadecimal receive NAC to $F7E. The radio will unmute when a digital signal with any NAC is detected.

Press [ENT] to store and return to the next value.

Squelch Mode (Digital models only)

```
PRG
SELECTIVE
SQUELCH MODE
```

This field is the Receiver Squelch Mode for Channel 1. This setting is only used if the receive mode selected was Digital or Mixed, or if User Channel Guard is activated. The upper part of the display will show 'PRG RX'.

Available modes are Normal and Selective.

Normal squelch opens on a matching NAC and ANY Talk Group ID or Individual Unit ID.

Selective squelch requires the correct NAC and the correct Talk Group ID, and for Unit-to-Unit calls, requires a matching Individual ID.

If the Squelch Mode is correct, press the [FCN] key to advance to the next field.

If a different Squelch Mode is desired, press the [PRI] key to toggle the setting. Then press the [ENT] key to store this setting and automatically advance to the next field.

Transmit Frequency

```
PRG
151.625
TX FREQUENCY
```

This field is the transmitter frequency for Channel 1.

If it is correct, press the [FCN] key to advance to the next field.

If you wish to change it, press the [CLR] key followed by the frequency in MHz, then [ENT] to store the new frequency and automatically advance to the next field.

Only valid frequencies will be operable.

If you want to operate this channel as a receive-only channel, press the [CLR] key (setting the display to 0.0) followed by the [ENT] key. The transmitter will be locked off for this channel.

Transmit Mode (Digital models only)
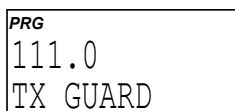
```
PRG
MIXED
TX MODE
```

This field is the transmit mode for channel 1. Available options are Analog, Digital, and Mixed.

If the mode is correct, press the [FCN] key to advance to the next field.

If a new mode is desired, press the [PRI] key to cycle through the mode settings. Press [ENT] to store the new mode and automatically advance to the next field.

Transmit Guard

```
PRG
111.0
TX GUARD
```
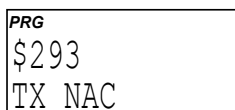
This field is the Analog Channel Guard value for Channel 1transmit.

NOTE: To enable User Tone Pick List Selection, the TX Guard must be set to 0.0 (no guard).

If this value is correct press the [FCN] key to advance to the next field. To enter a new value, press the [CLR] key to reset the display to 0.0. Press the number keys to enter a Tone Channel Guard value. See "Tone Channel Guard Values" in section 2.3.
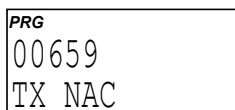
To enter Digital Channel Guard, first press the [CLR] key, then the [#] key, causing the letter 'D' to appear followed by three zeros. Enter the desired digital code using keys 0 thru 7 (keys 8 & 9 do not respond). See 'Digital Channel Guard Values' in section 2.4. Pressing the [PRI] key after the three digit code has been entered allows the digital code to be inverted. When the displayed value is correct, press the [ENT] key to store the Channel Guard and advance to the next field.

Transmit NAC (Digital models only)

```
PRG
$293
TX NAC
```

This field is the Network Access Code (NAC) for Channel 1 transmit. This value is only used if the transmit mode selected was

Digital or Mixed, or if User Channel Guard is activated.

```
PRG
00659
TX NAC
```

To see the NAC displayed in hexadecimal format, press and hold the [#] key.

To return to the decimal display, press and hold the [#] key again.

If the NAC is correct, press the [FCN] key to advance to the next field.

If a new NAC is desired, press the [CLR] key

In decimal mode, valid entries are 0 – 4095. The values 3966 and 3967 are reserved for receivers and cannot be entered.

In hexadecimal mode, valid entries are $0 - $FFF. The values $F7E and $F7F are reserved for receivers and cannot be entered.

To enter hexadecimal characters A - F:

Each long press of the [2] key toggles the rightmost character from A to B to C, then back to A.
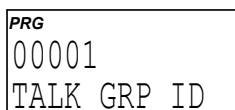
Each long press of the [3] key toggles the rightmost character from D to E to F, then back to D.

To enter a 'letter' after another 'letter' or number, first enter any number, then toggle it with long [2] or [3] key presses.

NOTE: To enable User NAC Pick List Selection, press and hold the 'U' key "[8] key". The display will show "UNAC EN". To disable Pick List Selection, press and hold the 'U' key again. If Pick List Selection is enabled, but none of the entries has been selected, the radio will use the default NAC ($293) when transmitting in digital mode.

Press [ENT] to store and return to the next value.

Talk Group ID (Digital models only)

```
PRG
00001
TALK GRP ID
```

This field is the Talk Group ID. This value is only used if the transmit mode selected was Digital or Mixed, or if User Channel Guard is activated. The upper part of the display will show 'PRG'.

If the displayed value is correct, press the [FCN] key to advance to the next field.

If you wish to change it, press the [CLR] key followed by the digits for the new TGID, then [ENT] to store the new value and automatically advance to the next field. Valid entries are 1– 65535.

NOTE: To enable User TGID Pick List Selection, press and hold the 'U' key "[8] key". The display will show "UTGID EN". To disable Pick List Selection, press and hold the 'U' key again. If Pick List Selection is enabled, but none of the entries has been selected, the radio will use the default TGID (1) when operating in digital mode.

Channel Label

```
PRG
CHANNEL 2
CHAN LABEL
```
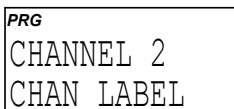
This field is the channel label for channel 1. If this label is correct press the [FCN] key to proceed to the entry point.

If a new channel label is desired, follow the instructions under "Group Label" in section 2.2.1.2.2.

After the CHAN LABEL is set, the display will return to the Channel 1 starting point. If you wish to review the settings for Channel 1, subsequent pressing of the [FCN] key will show each value and then return to the Channel 1 starting point.
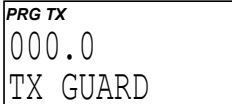
At the starting point for Channel 1, the display will show 'PRG CH 01'. Press the number keys for another channel number to gain access to the settings for that channel. Each channel is then programmed using the same steps described for Channel 1.

CMD Specific Programmable Items

Global Priority Channels Considerations

Priority channels in CMD radios operate on a "radio wide" basis. When PRI is on the assigned priority zone and channel are monitored regardless of the currently operating zone.

User Selectable Code Guard Considerations

```
PRG TX
000.0
TX GUARD
```

To access the User Selectable TX Code Guard list in a Command radio the transmit Code Guard must be programmed to 000.0.

User Selectable NAC and Talkgroup Considerations

```
PRG TX
UNAC EN
TX NAC
```

To access the User Selectable TX NAC list in a Command radio press and hold the [8 TUV] key, while in the TX NAC screen, until "UNAC EN" appears in the display.

To disable the User Selectable NAC and assign a channel specific NAC, press and hold the [8 TUV] key until "000.0" is displayed.

```
PRG TX
UTGID EN
TALK GRP ID
```

To access the User Selectable Talk Group ID list in a Command radio press and hold the [8 TUV] key, while in the Talk Group ID screen, until "UTGID EN" appears in the display.

To disable the User Selectable Talk Group and assign a channel specific ID, press and hold the [8 TUV] key until "00000" is displayed.

Programming the Picklists

Command radio Code Guard, NAC and Talkgroup picklist entries can be programmed without the need to enter the radio programming mode. This function must be enabled with the radio PC programming editor. Refer to the editor for details.

If enabled, picklists can be programmed during normal operation by the following steps:

NAC - 03
$F7F
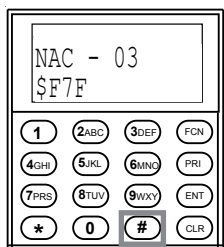
Enter the list view by pressing the [FCN} key followed by either the [T] key for the Code Guard Tone list, [G] for Talkgoup list or [N] for NAC list. The top display line will show the pick list number. The bottom line shows the programmed value.

Press the [PRI] key to cycle through programmed list.

103.5
TONE - 03
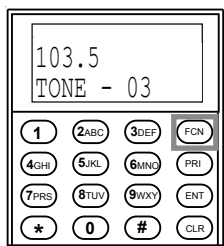
While the entry you want to edit is displayed, press and hold the [FCN] key until the "PRG" icon appears. The top display line will show the programmed value. The bottom line shows the pick list number.

Use the normal Code Guard, NAC and Talkgroup programming steps to change the entry.

Press [ENT] to return to normal operation.

CLONING RADIO SETTINGS

Any "Master" radio (a portable radio with the desired radio frequencies and settings) is capable of transferring its program to another BK Radio or "slave" radio. The radio receiving the program is referred to as the "clone." The LAA0700 or G/ECC cloning cable will be required in the following procedure.

When using the G/ECC to clone like type radio models, the end marked "G/D" should be connected to Master radio. When cloning between older and newer radio types match the labels with the radio models. (See "Radio Compatibility" charts for more information.)

NOTE: Some groups may be "locked" by PC programming to prevent them from being overwritten. Only "unlocked" groups will accept incoming clones.

What Clones

Information programmed in the selected group of a Master radio will be cloned to the Slave radio.

When cloning between radio types, the Slave radio will ignore information it does not use as channel or group information.

For instance, when using a DPH as the Master and a GPH-CMD as the Slave, information such as mode setting will be ignored since the GPH-CMD does not have digital operating ability.

Also when a Slave radio has more channels per group than the Master radio, the extra channels will not be changed.

Using Standard Model as the Master

Master   Clone

Master Switch

1. Make sure the battery packs for both radios are charged.

2. Attach the master switch end of the cloning cable to the side connector of the Master radio.

NOTE: One plug of the cloning cable has a push-button master switch. This plug must be attached to the Master radio.

3. Turn on the Master radio.

4. Select the group to be cloned from the Master radio.

```
 PRG
 CH   00
```

5. Put the Master radio in Programming Mode by pressing and holding the master switch then pressing and holding the [FCN] key until the display shows   '- - - ID.' Enter the password of the selected group. The display shows 'PRG CH 00.'

6. Review the values programmed in the radio by pressing the [FCN] or [ENT] key at each CHXX prompt. Any required changes must be made now.

7. Connect the other plug of the cable to the side connector of the radio you want to clone.

8. Turn on the clone and set it to the desired channel group.

```
 PRG
 PROG
```

9. Press the [*] key on the Master radio keypad. The display will flash 'PROG' signifying that the radio is ready to download its program to the clone.

```
 PRG
 CLONE
```

10. Press the [FCN] key on the Master radio keypad. The display will flash 'CLONE' while information from the master is downloaded to the clone.

11. If the download was successful, the display on the master will resume flashing 'PROG.'

• To clone another channel group, turn off both radios and go back to Step 3, changing the channel group as required.

• If cloning is finished, turn off the clone and disconnect the cloning cable. Normal radio operation will occur when you turn on the clone.

```
 PRG
 FAIL
```

12. If the download was not successful, the master will display 'FAIL' and multiple beeps will follow. Failure of downloading can be due to:

• Improper connection

• Failure to turn on the clone

• Setting the clone in Programming Mode

• Group 'locked' by PC Programming

NOTE: To stop the 'FAIL' Mode, press [CLR], turn off both radios, and try again, starting with Step 1 on the previous page.

Using Command Model as the Master

Data that can be cloned to another CMD radio includes:
Group data (GRP 01-25), Command Group data, Global data (GRP 00) and User Pick Lists (UTXG, UNAC, and UTGID)

Data that can be cloned to a standard D/GPH radio includes:
Group data (GRP 00) and Command Group data.

When cloning to a D/GPH radio, the Master's global data is converted to group data in the slave, and only the first 16 channels are transferred.

```
PRG

CMND CLONE
```

NOTE: When the Master's Command Group is cloned to a slave, the channel data that is 'pointed to' by the Command Group is transferred to a target group (not the Command Group) in the slave. The target group's label in the slave will be set to 'CMND CLN'.

When receiving an incoming clone from a D/GPH radio, the DPH-CMD radio ignores group data other than the group label and the group scan list bit. The DPH-CMD's global data is not disturbed.
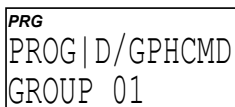
NOTE: Some groups may be "locked" by PC programming to prevent them from being overwritten. Only "unlocked" groups will accept incoming clones.
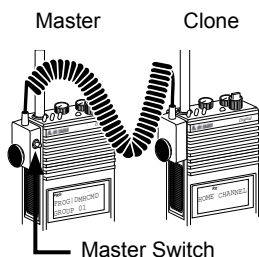
Cloning Instructions

Put the Master radio in Programming Mode by pressing and holding the master switch then pressing and holding the [FCN] key until the display shows 'PSWRD-******'. Enter the password of the selected group. The display shows 'PRG CH 00.'

Connect the other plug of the cable to the side connector of the radio you want to clone.

Turn on the clone and set it to the desired channel group by pressing the [#] key and entering the desired group number. To Command radio Global Data to another Command radio, select "GRP 00"

```
PRG
PROG|D/GPHCMD
GROUP 01
```

Press the [*] key on the Master radio keypad. The radio will respond showing the prompt 'PROG|D/GPHCMD' on the first line and 'Group XX' on the second line, where XX is the currently selected group.

```
PRG
PROG|D/GPH
GROUP 01
```

The first line shows the type of radio you want to clone . "D/GPHCMD" is used to send information when a Command radio is to be cloned. "D/GPH" is selected to send information to a non-command radio. Press and hold the [*] key to select the slave radio type.

Long [#] keypresses will cyle the second line of the display to show the data to be coppied to the slave. "Group 00" and "Pick List" are not valid for non-command radios.

Valid Data and Target Selections:

Data (line two)	Valid Target (line one)
GROUP 00 (Global data)	D/GPH-CMD only
GROUP 01 - 25	D/GPH-CMD, D/GPH
CMND GRP	D/GPH-CMD, D/GPH
PICK LIST	D/GPH-CMD only

```
PRG
CLONING
```

Once the data to be transferred has been selected, press the [FCN] key on the Master radio keypad. The top line of the display will flash 'CLONING' while the program in the master is being downloaded to the clone.

If the download was successful, the display on the Master will again display the clone prompt (target and data to be transferred).

```
PRG
FAILURE
```

If the download was not successful, the master will flash 'FAILURE' and multiple beeps will follow.

Failure of downloading can be due to:

- Improper connection
- Failure to turn on the clone
- Setting the clone in Programming Mode
- Target radio's group 'locked' by PC Programming.

NOTE: To stop the 'FAILURE' Mode, press [CLR], turn off both radios, and try again, starting with Step 1

When finished cloning, turn off the Clone and disconnect the cloning cable. Normal radio operation will occur when you turn on the Clone.

CLONEABLE INFORMATION TABLES

The G/ECC and LAA0700 Cloning Cables can be used to transfer data between various models of the same frequency band. Refer to the charts for valid Master and Slave radios and transferable data.

Radio Compatibility

		Master Radio		
		DPH/DPHX	**DPH/GPH-CMD**	**GPH/GPH Plus**
Valid Slave Radios	Portables	DPH/DPHX	DPH/DPHX	DPH/DPHX
		DPH/GPH-CMD	DPH/GPH-CMD	DPH/GPH-CMD
		GPH/GPH Plus	GPH/GPH Plus	GPH/GPH Plus
		EPH/EPI*		EPH/EPI*
		LPH/LPI*		LPH/LPI*
		MPH/MPI*		MPH/MPI*
	Mobiles	DMH	DMH	DMH
		GMH/GMH Plus	GMH/GMH Plus	GMH/GMH Plus
		LMH*		LMH*
		EMH*		EMH*

* Requires G/ECC Cloning Cable

Older Models

		Master Radio			
		LPH/LPI	**LPH/LPI**	**EPU/EPV LPU/LPV**	**LMH**
Valid Slave Radios	Portables	DPH/DPHX*	DPH/DPHX*	EPU/EPV	DPH/DPHX*
		GPH-CMD*	GPH-CMD*	LPU/LPV	GPH-CMD*
		GPH/GPH Plus*	GPH/GPH Plus*		GPH/GPH Plus*
		EPH/EPI	EPH/EPI		EPH/EPI
		LPH/LPI	LPH/LPI		LPH/LPI
		MPH/MPI	MPH/MPI		
	Mobiles	DMH*	DMH*	EMV	DMH*
		GMH/GMH Plus*	GMH/GMH Plus*		GMH/GMH Plus*
		LMH	LMH		LMH
		EMH	EMH		EMH

* Requires G/ECC Cloning Cable

Standard Radio as Master				
	DPH/DPHx	GPH/GPH+	GPH-CMD	DPH-CMD
Group Password	x	x		
ANI Settings	x	x		
TX Time-Out Timer	x	x		
Scan Delay Time	x	x		
Priority 1 Channel	x	x		
Priority 2 Channel	x	x		
Battery Saver Inhibit	x	x		
TX On Priority 1	x	x		
Priority 1 Lock	x	x		
Group Scan List	x	x	x	x
Scan List Lock	x	x		
User CG Selection	x	x		
Busy Channel Op	x	x		
ANI/DTMF Mode	x	x		
Display Settings	x	x		
Group Label	x	x	x	x
Channel Bandwidth	x	x	x	x
RX/TX Frequency	x	x	x	x
RX/TX Mode	x			x
RX/TX Code Guard	x	x	x	x
RX/TX NAC	x			x
Squelch Mode	x			x
Talk Group ID	x			x
Secure Selection (Encrypted Radios Only)				
Encryption Key (Encrypted Radios Only)				
Key Lock (Encrypted Radios Only)				
Channel Label	x	x	x	x

Command Radio as Master				
	DPH/DPHx	GPH/GPH+	GPH-CMD	DPH-CMD
Group # or Command Group				
ANI	x	x	y	y
TX Time-Out Timer	x	x	y	y
Scan Delay Time	x	x	y	y
Priority 1 Channel	x	x	y	y
Priority 2 Channel	x	x	y	y
Battery Saver Inhibit	x	x	y	y
Transmit On Priority 1	x	x	y	y
Priority 1 Lock	x	x	y	y
Group Scan List	x	x	y	y
Scan List Lock	x	x	y	y
Busy Channel Op	x	x	y	y
ANI/DTMF Mode	x	x	y	y
Display Settings	x	x	y	y
Programing Password			y	y
Group Label	x	x	x	x
Channel Bandwidth	x	x	x	x
RX/TX Frequency	x	x	x	x
RX/TX Mode	x			x
RX/TX Code Guard	x	x	x	x
RX/TX NAC	x			x
Squelch Mode	x			x
Talk Group ID	x			x
Channel Label	x	x	x	x
Code Guard Selection			x	x
Pick List				
Code Guard Picklist			x	x
NAC Picklist				x
TGID Picklist				x

x = Any Group except 00   y = Group 00 only

CTCSS CODE GUARD VALUES

The CTCSS Code Guard system may be set for any frequency in the range of 67 to 255.9 Hz. However, since most systems adhere to the Electronic Industry Association (EIA) standards, tones should be selected from the following EIA list. In order to insure optimum performance, tone selection for use on the same radio frequency (RF) channel or adjacent channels in the same coverage area should be made from one of the Groups A, B, or C to the maximum degree possible.

Group A		Group B		Group C
67.0 (XZ)	*151.4 (5Z)	71.9 (XA)	146.2 (4B)	74.4
77.0 (XB)	162.2 (5B)	82.5 (YZ)	156.7 (5A)	79.7
88.5 (YB)	173.8 (6A)	94.8 (ZA)	167.9 (6Z)	85.4 (YA)
*100.0 (1Z)	186.2 (7Z)	103.5 (1A)	*179.9 (6B)	91.5 (ZZ)
107.2 (1B)	203.5 (M1)	110.9 (2X)	192.8 (7A)	
114.8 (2A)	218.1 (M3)	*118.8 (2B)	210.7 (M2)	
123.0 (3Z)	233.6	127.3 (3A)	225.7 (M4)	
131.8 (3B)	250.3	136.5 (4Z)	241.8	
141.3 (4A)				

* 50/60 Hz power distribution systems could cause falsing.

The assignments in a given area shall be made from within one of the Groups: A, B, or C.

CDCSS CODE GUARD VALUES

Codes for the CDCSS Code Guard system may be chosen from the following list. Since there are no EIA standards for the performance or compatibility of CDCSS Code Guard systems it is recommended that an operational test be made on the intended system before wholesale assignments are made. In some cases either or both transmit and receive codes will require an inverted code to operate with existing systems. This can be done during the code programming of the system. Usually systems using direct Unit-to-Unit transmission (systems without mobile relays, repeaters, remote control, etc.) may use codes from the table. Systems with relays, etc., may use code variations for systems control and operational efficiency. The system operator or engineer should be consulted regarding the operational requirement on such systems.

023	065	131	165	245	315	411	466	612	703
025	071	132	172	251	331	412	503	624	712
026	072	134	174	261	343	423	506	627	723
031	073	143	205	263	346	431	516	631	731
032	074	152	223	265	351	432	532	632	732
043	114	155	226	271	364	445	546	654	734
047	115	156	243	306	365	464	565	662	743
051	116	162	244	311	371	465	606	664	754
054	125								

CH00 and GRP 00 Quick Reference Guide

Standard Models

Channel 0 Group One Functions (DPH, DMH, GPH and GPH Plus)

Battery Saver Inhibit	1-*1*2345
Group Scan List	1-1*2*345
Transmit On Priority 1	1-12*3*45
Priority 1 Lock	1-123*4*5
Scan List Lock	1-1234*5*

Channel 0 Group One Functions (Older Models)

Battery Saver Inhibit	1-*1*2345
Priority Mode A	1-12345
Priority Mode B	1-1*2*345
Priority Mode C	1-1*23*45
Priority 1 Lock	1-123*4*5
Scan List Lock	1-1234*5*

Channel 0 Group Two Functions

User Code Guard Selection	2-*1*2345
Busy Channel Indicate	2-12*3*45
Busy Channel Lockout	2-1*23*45
Busy Channel Lockout w/override	2-1*2*345
ANI Mode	2-123*4*5
DTMF Mode	2-1234*5*
ANI and DTMF Mode	2-123*45*

Channel 0 Group Three Functions

Reserved for Future Enhancements	3-*12*345
Backlight on Display Change	3-12*3*45
Backlight on Key Press	3-123*4*5
Alphanumeric/Numeric Display Mode	3-1234*5*

Command Models

Group 0 Group One Functions

Group Scan List	1-1234567*8*

Channel 0 Group Two Functions

Busy Channel Indicate	2-12*3*45678
Busy Channel Lockout	2-1*23*45678
Busy Channel Lockout w/override	2-12*3*45678
ANI Mode	2-123*4*5678
DTMF Mode	2-1234*5*678
ANI and DTMF Mode	2-123*45*678

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