

## NOTES

Purchase Date: \_\_\_\_\_

Date Placed in Service:

Purchased from: \_\_\_\_\_

**Contact:**

Phone Number: \_\_\_\_\_

Service Center Phone: \_\_\_\_\_

Model Number:

Serial Number:

Selective Call Number:

ANI Number:

Vehicle Number:

## Contact

Phone Number

[illegible]

# KG208

## Operating Instructions

The KG208 series VHF or UHF FM radio transceivers provide professional mobile communications for a wide variety of applications. Police departments, security and public safety agencies, courier and freight companies, construction, airport ground services, petroleum and utility industries all may use the radio for reliable communications.

KG208 radios employ sophisticated technology and microprocessor control to make changing the radio's characteristics fast and easy. Any computer-equipped dealer or service shop with the necessary Software and Programming Manual can easily program your radio to your specific operating requirements.

## Radio Features

- Simplex or semi-duplex operation
- High performance specifications
- Wide non-tuning bandwidth
- Wide-band/Narrow band by channel
- 25 Watt and 40 Watt models available
- IBM-PC™ compatible field-programmable features
- Emergency Alarm
- Direct input of channel number
- Up to 200 channels, or
- Up to 100 channel with 8-digit alphanumeric "Channel Name"
- "Kill" Mode" (disable from another radio).
- ANI, Automatic Number Identification
- CTCSS by channel, DCS optional
- DTMF or 5-Tone select-call encoder / decoder
- Display of Caller ID
- Call forwarding
- Voice Scrambling
- Single-tone encoder
- Transmitter high or low power selectable or assigned by channel

- Display of programmed frequencies and tones
- Transmit Time Limiter (TTL)
- Multiple scanning modes
- Large alphanumeric LCD display with back-light
- User friendly
- Self diagnostics
- Compact, rugged die-cast and steel construction
- State-of-the-art technology

## **Important Safety Information**

The Federal Communications Commission (FCC) of the United States in General Docket 79-144 adopted a safety standard for human exposure to radio frequency energy. Proper operation of this FCC regulated equipment will result in exposure significantly below FCC recommended limits.

**DO NOT** stand within 60 cm of the radio antenna while transmitting. No not transmit if someone is standing near the antenna.

**DO NOT** press the transmit switch unless you actually want to transmit.

**DO NOT** allow children to play with any radio equipment containing a transmitter.

**DO NOT** operate the radio near unshielded electrical blasting caps.

**DO NOT** operate the radio in an explosive atmosphere unless the radio is specifically approved for such use.

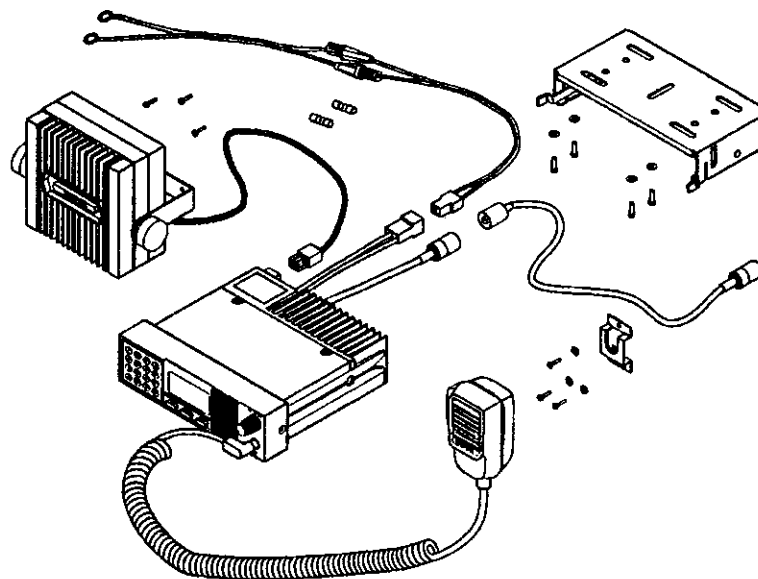
**DO NOT** operate the radio in a vehicle while refueling.

## **Initial Inspection**

When you receive your radio, inspect the carton for any signs of shipping damage. **Report any damage to the carrier immediately.** Then remove and check the contents to be sure all items have been included.

## **Standard Package**

- Check radio for proper model as ordered
- Mounting bracket
- DC power cable
- Microphone & hang-up clip
- Spare fuse, mini 12.5 Amp
- Installation hardware
- Operators manual (this manual)



**Standard Package Contents**

## **Optional Items**

Check your order or packing list for the items to be supplied.

## Installation

It is highly recommended that a qualified technician or engineer perform installation. Special equipment is required to properly install and tune the antenna.

If you are qualified and have the necessary equipment, refer to the Programming Manual for entering data and selecting of the radio's many features, then refer to the Service Manual for detailed installation instructions.

## Supply Voltage

This radio is designed for operation from a **12 Volt negative ground** supply, usually a vehicle battery.

If used as a fixed station, connect to a 13.6 to 13.8 Volt **regulated** DC power supply. In some cases, a battery may be connected to the power supply to provide operation during AC power failure. The slide-in bracket makes it convenient to remove the radio from the vehicle to use at the fixed location if dual operation is required. A desk microphone is available for use with fixed stations.

## Microphone

Insert the microphone connector into the socket on the right side of the panel. The cable should point downward. Note that there is a lock on the connector to prevent it from being accidentally disconnected. To remove, grasp the connector near the panel and pull gently.

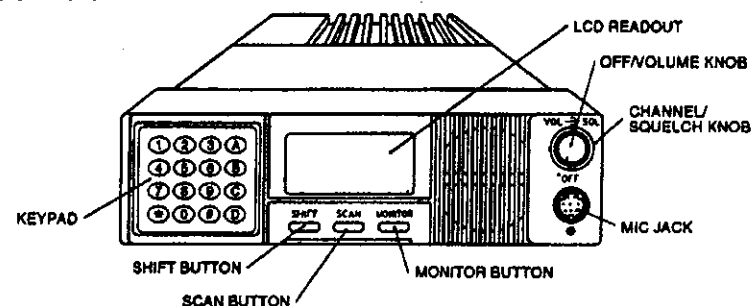
## Antenna Connection

Connect the antenna cable to the female type "N" connector/cable at the rear of the radio.

## External Speaker Connection

An accessory external speaker is available which will provide higher 5 Watt audio power level. This is helpful if the radio is installed in a noisy vehicle. A connector is provided on the rear of the radio to attach the speaker. It is necessary to remove the existing jumper plug to disconnect the internal speaker. To avoid loss, it is recommended that this plug be attached to one of the radio cables for future use in testing the radio. The radio will not operate unless either the external speaker or the jumper plug is connected.

## Operation



### OFF/VOLUME

Switch the radio on by rotating the VOLUME knob clockwise  $\frac{1}{2}$  turn. The volume may be adjusted later when you receive a message.

### CHANNEL/SQUELCH KNOB

Select the desired channel by rotating the CHANNEL knob. The channel number will appear in the display. Either 1 or CH-1 may appear depending on other program features used. If using the Channel Name feature, the name will appear after a short time.

The channel may also be selected by pressing C on the keypad and entering the channel number, then C again. Example: C 1 2 C will select channel 12. If the final C is not entered, the radio will wait for two seconds for the next digit, then switch to the selected channel. If a channel is selected that is not programmed, a BEEP will sound and the radio will return to the original channel.

### SHIFT BUTTON

Assigns alternate functions to Channel Knob and the keypad. Stays active for four seconds after being pressed.

### SCAN BUTTON

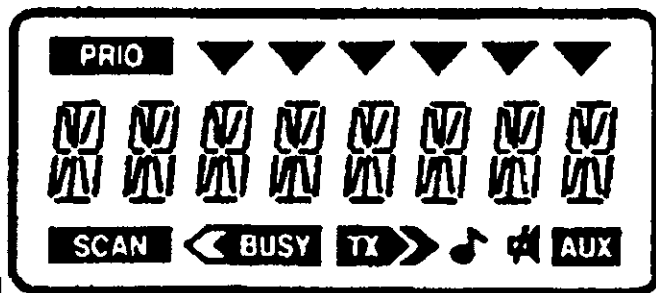
Controls the All Scan mode.

### MONITOR BUTTON

Sets and resets the decoder (mutes and unmutes speaker).

### KEYPAD

Enters selective call digits and controls radio functions with use of the SHIFT button.



LCD Display

### Display Icons

The drawing above shows all of the ICONS and digits that are used to indicate radio operation. The function of each icon will be discussed here, and again as we cover the operation and features.

#### Top row:

**PRIO** indicates that the radio is in one of the priority scan modes.

There are six (6) arrows along the top of the display. The first indicates that the shift button has been pressed. The remaining arrows indicate the active field for entering 5 Tone digits.

#### Center row:

There are eight alphanumeric characters across the center that display channel number, channel name, tone format, call numbers, caller ANI and other information required by the program.

#### Bottom Row

- SCAN** indicates that the radio is in one of the scan modes.
- BUSY** indicates that the channel is in use.
- TX** indicates that the radio is in the transmit mode.
- >** indicates that the radio is in the high power mode.
- ♪** indicates that DTMF or 5Tone data is being transmitted.
- 🔇** indicates that the decoder is set and the speaker is muted.
- AUX** indicates an auxiliary function.

### Squelch

Locate the SHIFT (FUNCTION) button on the radio panel. When pressed, the first arrow will appear at the top of the display. The CHANNEL knob now becomes the SQUELCH control. While turning the knob, the display will show **SQ-0** through **SQ-7**.

At **SQ-0**, the squelch will be open and the **BUSY** icon will be displayed. If the radio is not equipped with a decoder, noise will be heard in the speaker. Rotate the CHANNEL knob clockwise until the **BUSY** icon goes away (usually between SQ-2 and SQ-4). This is the most sensitive setting for the squelch. If the squelch is set to a higher number, you may miss weaker messages. If you hear occasional noise bursts in the speaker, set the squelch to a higher number. A few seconds after the desired setting is made, the radio will return to normal operation.

### Monitoring the Channel

If the channel is in use, the **BUSY** icon will be displayed. If you are not using any type of decoder, you will be able to hear any messages on the channel. You should not transmit until the channel is clear except when you are communicating through a repeater. In this case, the repeater will remain on the air for several seconds after the other party has finished speaking. You should begin speaking immediately even though the **BUSY** icon is still displayed.

If a CTCSS or DCS decoder is in use, a **🔇** icon will appear in the lower right of the display and the audio will remain muted when another person (outside of your system) is using the channel (indicated by the **BUSY** icon). If you wish to listen to this message, you may disable your decoder by pressing the MONITOR button. This will toggle the decoder and speaker ON/OFF causing the **🔇** icon to switch on and off.

### Transmitting

To transmit, press the PTT button on the left side of the microphone. The **TX** icon will appear in the display. Note that the **>** icon indicates high power. Hold the microphone near your lips and speak in a normal voice. When finished speaking, release the PTT button.

A common mistake is to begin speaking before pressing the PTT button. This may cause the first word of your message to be cut off. It is recommended that you press the button, then wait one second before speaking. This is especially important when using a repeater or ANI tone signaling.


Please review the safety information at the beginning of this manual to avoid endangering yourself or others.

## Using SCAN

The radio has two types of scanning, "All Scan" and "Program Scan". Each of these has a "Busy" mode and a "Priority" mode of operation.

In each of the scan modes, when a call is received, the radio will pause on the busy channel for the duration of the message and for a few seconds after the end of the message before resuming scan. This allows you to hear any reply to the message before the radio resumes scanning. During this pause, you may transmit to answer a call on that channel without leaving the scan mode. If you wait until the radio resumes scanning, you cannot transmit without first exiting the scan mode and selecting the proper channel.

To temporarily delete a channel from the scan list, wait for the radio to stop on that channel, press **SHIFT**, then press **\*** for two seconds until you hear a beep. To restore all deleted channels, press **SHIFT**, then press **A** for two seconds until you hear a beep. All deleted channels are restored each time you exit the scan mode.

If the radio is programmed for selective call, scan capability is limited. The radio will not scan unless the decoder is set (  icon is present). Then, the scan will only stop if the correct decode select call number is received.

**Priority Channels:** During programming, a HIGH and LOW priority channel is entered for both the All Scan and Program Scan modes. These may be a different pair of channels for each mode.

**All Scan:** In this mode, the radio will scan all channels and stop on any that is busy. Select All Scan by pressing **SCAN**. The display will show **BY--AL--SC** (Busy All Scan). The **SCAN** icon will be displayed. To exit this mode, press **SCAN**.

**Priority All Scan:** While in the All Scan mode, press **SHIFT**, then **9** (note that it is not necessary to hold the **SHIFT** button in). The display will show **PR--AL--SC** (Priority All Scan). The **PRIO** and the **SCAN** icons will be displayed. The radio will now scan all channels and stop on any that is busy. While listening to this channel, it will also monitor the All Scan HIGH and LOW priority channels selected during programming.

If a signal appears on the LOW priority channel, the radio will immediately switch to that channel. Also, while listening to the LOW priority channel, the radio will continue to monitor the HIGH priority channel. If a signal appears there, it will immediately switch to that channel. When the priority channel messages are ended, the radio will resume scan. To exit this mode, press **SCAN**.

**Priority Transmit:** When the radio is in either All Scan mode, if you press the **PTT**, the radio will switch to the All Scan HIGH priority channel and remain there during the transmission and for several seconds after. This allows the operator to send a message on the priority channel and receive a reply without exiting the scan mode.

**Program Scan:** In this mode, the radio will scan all channels that were selected for scan during programming and stop on any that are busy. Select Program Scan by pressing the **#** (no **SHIFT**). The display will show **BY--PG--SC** (Busy Program Scan). The **SCAN** icon will be displayed. To exit this mode, press **SCAN**.

**Priority Program Scan:** While in the Program Scan mode, press **SHIFT**, then **9**. The display will show **PR--PG--SC** (Priority Program Scan). The **PRIO** and the **SCAN** icons will be displayed. The radio will now scan all channels that were selected for scanning during programming and stop on any that are busy. While listening to this channel, it will also monitor the Program Scan HIGH and LOW priority channels selected during programming. If a signal appears on the LOW priority channel, the radio will immediately switch to that channel. Also, while listening to the LOW priority channel, the radio will continue to monitor the HIGH priority channel. If a HIGH priority signal appears, it will immediately switch to that channel. When the priority channel messages are ended, the radio will resume scan. To exit this mode, press **SCAN**.

**Priority Transmit:** When the radio is in the Program Scan mode, if you press the **PTT** the radio will switch to the Program Scan HIGH priority channel and remain there during the transmission and for several seconds after. This allows the operator to send a message on the priority channel and receive a reply without exiting the scan mode.

## Priority Channel Instant Select

When in normal non-scan operation, the user may immediately switch to the All Scan HIGH Priority channel by pressing **SHIFT**, then **B**. Pressing **SHIFT**, **B** again will select the All Scan LOW Priority channel. Repeated pressing will toggle between the two channels.

To switch to the Program Scan HIGH Priority channel, press **B**. Pressing **B** again will select the Program Scan LOW Priority channel. Repeated pressing will toggle between the two channels.

## **Advanced Features**

Your new Model KG208 contains many advanced features that may be used to suit your individual system needs. Some are available at all times while others may be programmed as needed. Your system administrator may provide additional instructions about specific features used in your system.

### **Channel Name**

During programming, each channel may be assigned a name to assist you in channel selection. For example, channel 1 may be REPEAT, channel 2 may be POLICE, channel 3 may be PRIVATE, etc. When the channel is selected, the actual channel number will appear in the display. After a short time, the channel name will appear. Up to 8 alphanumeric characters may be used.

Note that the radio normally is capable of up to 200 channels. If the Channel Name feature is used, only 100 channels may be programmed due to the additional memory requirements.

### **Transmit Time Limiter (TTL)**

This feature limits the length of each transmission to a pre-programmed time (5 to 255 sec.). This prevents long transmissions, either accidental or intentional. If the time limit is exceeded, the radio will stop transmitting and return to the receive mode. You must release the PTT button for five seconds before you can resume transmitting.

### **Alert Tones**

The radio may be programmed to emit a beep at the beginning of each transmission, at the end, or both. This will alert the operator that he has begun and/or ended his transmission. Tones may also be programmed to signal when keypad buttons are pressed.

### **Power-off Timer**

If this program feature is programmed, the radio will automatically turn off after a period of time with no activity (1 to 15 hours). This will prevent

the vehicle battery from going dead when the radio is not in use. When the radio turns off, the display will show **PW OFF**. To return to normal operation, turn the radio OFF, then ON.

### **Transmit Inhibit**

During programming, different conditions may be selected to prevent transmitting, such as channel is busy, improper CTCSS tone, etc. If the selected condition exists, the radio will not transmit and you may hear a beep when you press the PTT button.

### **Voice Scrambler**

This feature may be programmed for any channel or channels. It scrambles the voice so that it cannot be understood by another radio unless it also has the scramble feature. This feature may be programmed into a several radios to permit private communications between those radios. Others in the group will not understand the messages. This feature is useful for police and military operations.

### **ANI (Automatic Number Identification)**

If this feature is programmed, the radio will transmit a unique ANI number each time the PTT button is pressed. This number may be sent at the beginning of the transmission, at the end of the transmission, or both. When the number is being sent, a small 📡 icon will appear in the lower right of the display. If this appears at the beginning of your message, your voice may be covered by the tones and will not be heard by others. You should practice pressing the PTT and waiting for one second before beginning to speak.

If the control point is using another KG208, it may be programmed to display the ANI of any radio on the channel. With another type of base station, equipment is available to display the ANI. In either case, the operator at the control point will know which radio is transmitting.

### **Kill Mode**

If this feature is programmed, the radio may be disabled or "killed" by another operator in the system that knows the proper kill code and kill password. This feature may be used if the radio or vehicle is stolen or lost. The radio must be turned on and the kill code must be sent on the selected channel. When the kill code is properly received, the radio will answer back (transpond) with its ANI number, then become disabled and the display will show **F**. If the radio is turned off, out of range or on a different channel, the Kill feature will not operate and the transpond will

not be heard. After entering the kill mode, the radio is totally disabled and must be returned to a service center for reprogramming. Information regarding kill procedures may not be made available to all users.

### **Emergency Alarm (Man Down)**

If this feature is programmed, the radio will be capable of sending an alarm when the user is in danger or injured. To activate the alarm, press SHIFT, PTT and any keypad button, all at the same time. Also, the radio may be equipped with a momentary ALARM switch on the floor of the vehicle. The radio will switch to an emergency channel, transmit the radio Emergency ANI, then stay in the transmit mode for 10 or 20 seconds to alert others. The display will show E. During the time the transmitter is activated, the microphone is active so that other users may monitor activity in the vehicle. This is followed by a period of silence (no transmit). If programmed to do so, the radio will send a beep—beep—beep sound as an audible alert during the transmit period. A timer is also programmed which turns off the alarm after 1 to 15 hours. The radio may be silenced by sending its kill code from another radio during the period when it is not transmitting (see Kill Mode on previous page).

With proper display equipment, the operator at the control point will know which radio is transmitting and that an emergency exists.

### **User Password (PIN Number)**

If this feature is programmed, you must enter the proper Personal Identification Number (up to 6 digits) before the radio will operate. Upon switching on the radio, the display will show PLS PIN (please enter PIN). The operator must press \* to clear the display, then enter his password. If the correct number is not entered in a certain number of attempts, the radio will enter the kill mode (see above) and must be returned to a service center for reprogramming.

### **Selective Call Operation (sel call)**

If this feature is programmed, selective call may be used to call individual or groups of users within the system. Each radio is assigned a specific "phone number". The radios are normally muted until their specific number is called. The radio supports DTMF and 5Tone, encode and decode formats. Before using selective call you must first select the desired tone format using SHIFT, 0 for 2 seconds.

A memory is included to store up to 10 frequently called numbers (see SHIFT 3 below). These numbers may contain any of the 16 keypad digits in any sequence.

### **Placing a Call, DTMF Mode**

In DTMF mode, digits are transmitted as they are entered. Only digits 1 through 9, 0 and A may be used as the first digit. Keys B, C & D have specific functions when entered alone. After the first digit, any of the 16 digits may be used. Up to 16 total digits may be entered. If the digits are entered quickly, the other radio may transpond (send an acknowledge tone) after the last digit is entered. However, it may be necessary to send the number again. Press SHIFT, then D. A 📞 icon will appear in the display indicating that the tones are being transmitted. To redial, press D. If the call is received, the other radio will answer back (transpond) with a short tone, then "ring" several times to signal the operator. That operator may then answer the call. After a number is sent, a new number may be entered. It is not necessary to clear the display.

### **Placing a Call, 5Tone Mode**

In 5Tone mode, enter the digits in the field indicated by the arrow at the top of the display. To clear the display, hold the SHIFT key and press the PTT. However, it is not necessary to clear the display. New numbers entered will replace existing digits. Only digits 1 through 9, 0 and A may be used. Other keys have specific functions when entered alone or with the SHIFT key. Due to the four-second delay of the SHIFT function, entry of B, C, or D will cause undesired results. When entering digits, the pointer will advance automatically as numbers are entered or it may be advanced during entry using the CHANNEL knob.

After the complete number is entered, press D (no SHIFT) to send the number. A 📞 icon will appear in the display indicating that the tones are being sent. If the other radio receives the call, it will automatically answer back (transpond) with a short tone, then "ring" several times to signal the operator. That operator may then answer the call. If the other radio receives the call (transponds) but does not answer, you may redial by pressing D.

### **Receiving a Call**

If another party calls you, your decoder will unmute the speaker and the radio will "ring" several times. To answer, press the PTT button and speak. The decoder will automatically reset after a short time.

In 5Tone systems, the radio may be programmed to display the identity of the caller.

## **Special Keypad Functions**

The main function of the keypad is to enter digits for selective calling. However, the keypad is also used to control many radio functions by pressing keypad buttons within four seconds after pressing the SHIFT key. For some functions, the SHIFT is not required.

### **Firmware Identification**

If the SHIFT is held when the radio is turned on, the display will indicate the firmware version and the software required for programming the radio. For example PRG 6KEN indicates that firmware version 6KEN is installed in the radio and that 6KEN software must be used for programming. This version contains the features covered by this manual. If another version is indicated, that software must be available for programming.

**NOTE:** In all cases where the SHIFT key is used to control another function, it is not necessary to hold the SHIFT key. Press it and you have four seconds to press the next button. The first arrow will appear at the top of the display during this time.

### **SHIFT, 1 Display Brightness**

Toggles the display backlight from bright to dim.

### **SHIFT, 2 HIGH/LOW Power Selection**

If enabled during programming, selects HIGH (full) or LOW (1/2) power, unless the radio has been readjusted from factory settings. When on HIGH power, a > icon will appear in the display.

### **SHIFT, 3 Select Call Number Memory**

Selects one of the 10 Encode Memory Registers, M0 to M9 that is used to store frequently called numbers for selective calling. Numbers are entered during programming. To recall a number, press **SHIFT**, then **3** and rotate the CHANNEL knob. Each number will be displayed in sequence. To send the displayed number, press **D**. A 📶 will appear in the lower edge of the display while the tones are being sent.

### **SHIFT, 4 Single Tone Function**

Turns the SINGLE TONE function ON or OFF.

### **SHIFT, 5 Transfer Mode (Call Forwarding)**

Toggles the Transfer Mode ON or OFF. Upon receipt and decoding of a valid number, this feature allows the radio to retransmit (forward) a number on the same or different channel.

### **SHIFT, 6 Kill Password**

Permits entry of a password to use the Kill function. This function allows you to disable (kill) another radio by sending that radio its proper kill code. Details of this feature may not be made available to every user.

### **SHIFT, 7 Information Display**

If enabled during programming, displays programmed data such as channel frequencies, CTCSS / DCS codes and ANI.

### **SHIFT, 8 Keypad Lock**

Turns the KEY LOCK feature on or off. When locked, certain keypad and control functions are locked out. This may be used to prevent accidentally sending tones or switching channels. Variations of operation may be selected during programming.

### **SHIFT, 9 Scan Mode Select**

If the radio is in one of the scan modes, **SHIFT 9** will select the PRIORITY scan mode. **PRIO** will appear in the upper left of the display and the radio will monitor the HIGH and LOW priority channels selected during programming (see "Using Scan").

### **SHIFT, \* Digital Encryption**

Turns the optional Digital Encryption feature ON or OFF.

### **\* (no SHIFT) PIN entry**

If the radio has been programmed to require a Personal Identification Number (PIN) for operation, \* must be entered before entering the PIN. This will be requested upon turning on the radio. The display will show **PLS PIN**.

### **SHIFT, 0 DTMF / 5Tone format select**

If enabled during programming, when SHIFT is pressed and 0 is held for two seconds, the tone format toggles from DTMF to 5Tone or from 5Tone to DTMF.



**SHIFT, #** All Scan Select

Turns on the All Scan mode. This mode scans all channels in the radio. The display will show **BY--AL--SC** (Busy All Scan) indicating that the radio is scanning all channels (see "Using Scan").

## # (no SHIFT) Program Scan Select

Turns on the Program Scan mode. The display will show **BY--PG--SC** (Busy Program Scan) indicating that the radio is scanning all channels that were selected for scan during programming (see "Using Scan").

**SHIFT, B All Scan Priority Channel Select**

Instantly selects one of the All Scan Priority Channels specified during programming. Repeated pressing toggles between HIGH and LOW priority.

**B (no SHIFT) Program Scan Priority Channel Select**

**Instantly selects one of the Program Scan Priority Channels specified during programming. Repeated pressing toggles between HIGH and LOW priority.**

**SHIFT, C** DTMF Clear

Clears any new DTMF entry that may have been entered in error. Example, if the desired number is 12345 and you have entered 13345, press SHIFT, C to erase 13345, then enter the correct number 12345.

### C (no SHIFT) Instant Channel Selection

C, followed by keypad entry of a channel number followed by C again will instantly select that channel. Example: C 1 2 C will select channel 12. The display will flash the new channel several times before switching. If an unused channel is selected, the radio will BEEP and return to the original channel. If the final C is not entered, the radio will wait for two seconds, then switch to the selected channel. This feature is helpful if you are using a large number of channels.

### SHIFT, D Sends Call

In DTMF Mode, sends sequence of DTMF digits immediately after entry.

In 5Tone mode, sends R (repeat) 5Tone sequence.

**D (no SHIFT) Send 5Tone) or Redial (DTMF)**

In 5Tone mode, sends or redials displayed sequence entered by keypad. If sequence is selected from memory (see SHIFT 3), it is sent only one time, then the radio reverts to the previously displayed digits.

In DTMF mode, redials the previously sent digits after first sending with SHIFT D (see above). If D is pressed while entering a sequence, the radio accepts it as a digit in the sequence. If sequence is selected from memory (see SHIFT 3), it replaces the previous entry and is sent each time the D is pressed.

## If you have a problem

If the radio does not operate properly, there are several things you may check.

1. Check all cables for damage and see that all connectors are securely attached.
2. Check the antenna for damage.
3. Check for proper channel and volume setting.
4. Transmit to a known good radio to check the transmitter operation.
5. Try operating from a higher location, you may be out of range of the receiving station.

## Operation Notes

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