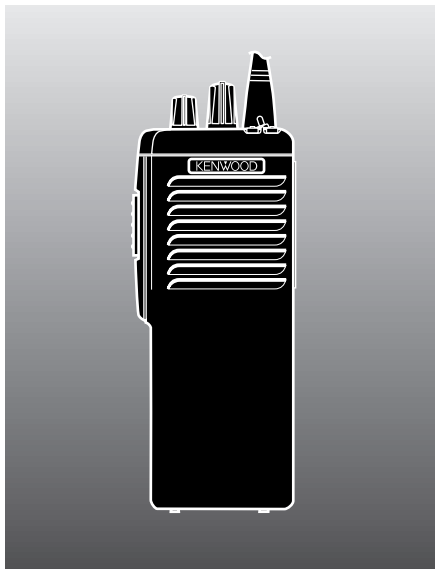


KENWOOD

INSTRUCTION MANUAL



VHF FM TRANSCEIVER

TK-190

KENWOOD CORPORATION

© B62-1172-00 (K)
09 08 07 06 05 04 03 02 01 00

THANK YOU

We are grateful you chose **KENWOOD** for your land mobile radio applications. We believe this easy-to-use transceiver will provide dependable communications to keep personnel operating at peak efficiency.

KENWOOD transceivers incorporate the latest in advanced technology. As a result, we feel strongly that you will be pleased with the quality and features of this product.

NOTICES TO THE USER

- ◆ *GOVERNMENT LAW PROHIBITS THE OPERATION OF UNLICENSED RADIO TRANSMITTERS WITHIN THE TERRITORIES UNDER GOVERNMENT CONTROL.*
- ◆ *ILLEGAL OPERATION IS PUNISHABLE BY FINE OR IMPRISONMENT OR BOTH.*
- ◆ *REFER SERVICE TO QUALIFIED TECHNICIANS ONLY.*
- ◆ *DO NOT OPERATE YOUR TRANSCEIVER IN EXPLOSIVE ATMOSPHERES (GASES, DUST, FUMES, ETC.).*
- ◆ *TURN OFF YOUR TRANSCEIVER WHILE TAKING ON FUEL, OR WHILE PARKED IN GASOLINE SERVICE STATIONS.*

SAFETY: It is important that the operator is aware of and understands hazards common to the operation of any transceiver.

One or more of the following statements may be applicable:

FCC WARNING

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna.*
- *Increase the separation between the equipment and receiver.*
- *Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.*
- *Consult the dealer for technical assistance.*

ATTENTION (U.S.A. Only):



The RBRC Recycle seal found on **KENWOOD** nickel-cadmium (Ni-Cd) battery packs indicates **KENWOOD's** voluntary participation in an industry program to collect and recycle Ni-Cd batteries after their operating life has expired. The RBRC program is an alternative to disposing Ni-Cd batteries with your regular refuse or in municipal waste streams, which is illegal in some areas.

For information on Ni-Cd battery recycling in your area, call (toll free) 1-800-8-BATTERY (1-800-822-8837).

KENWOOD's involvement in this program is part of our commitment to preserve our environment and conserve our natural resources.

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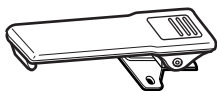
UNPACKING AND CHECKING EQUIPMENT

Note: The following unpacking instructions are for use by your **KENWOOD** dealer, an authorized **KENWOOD** service facility, or the factory.

Carefully unpack the transceiver. We recommend that you identify the items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

■ Supplied Accessories

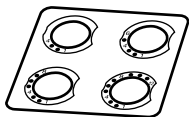
Item	Part Number	Quantity
Belt hook	J29-0652-XX	1
Universal connector cap	B09-0363-XX	1
Channel seal	B03-0594-XX	1
Channel stopper	D32-0421-XX	1
Screw set	N99-2004-XX	1
Warranty card	—	1
Instruction manual	B62-1172-XX	1



Belt hook



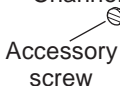
Universal connector cap



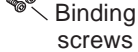
Channel seal



Channel stopper



Accessory screw



Binding screws

Screw set

PREPARATION

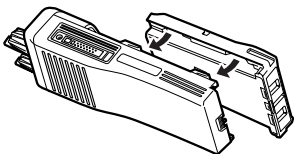
■ Installing/ Removing the Optional NiCd Battery Pack

The battery pack is not charged at the factory; charge it before use.

CAUTION:

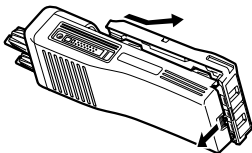
- ◆ *DO NOT RECHARGE THE BATTERY PACK IF IT IS ALREADY FULLY CHARGED. DOING SO MAY CAUSE THE LIFE OF THE BATTERY PACK TO SHORTEN OR THE BATTERY PACK MAY BE DAMAGED.*
- ◆ *AFTER RECHARGING THE BATTERY PACK, DISCONNECT IT FROM THE CHARGER. IF THE CHARGER POWER IS RESET (TURNED ON AFTER BEING TURNED OFF), RECHARGING WILL START AGAIN AND THE BATTERY PACK WILL BECOME OVERCHARGED.*
- ◆ *DO NOT SHORT THE BATTERY TERMINALS OR DISPOSE OF THE BATTERY BY FIRE.*
- ◆ *NEVER ATTEMPT TO REMOVE THE CASING FROM THE BATTERY PACK.*

1 Match the four grooves of the battery pack with the corresponding guides on the back of the transceiver.



2 Slide the battery pack along the back of the transceiver until the release latch on the base of the transceiver locks.

3 To remove the battery pack, pull back on the release latch and slide the pack away from the transceiver.



■ Installing the Optional Antenna

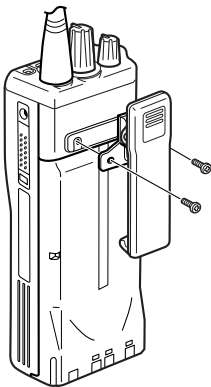
Screw the antenna into the connector on the top of the transceiver by holding the antenna at its base and turning it clockwise until secure.



■ Installing the Belt Clip

If necessary, attach the belt clip using the two supplied 3 x 6 mm screws.

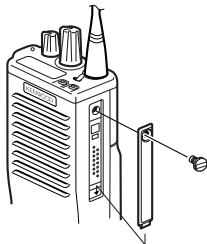
Note: *If the belt clip is not installed, its mounting location may get hot during continuous transmission or when left sitting in a hot environment.*



■ Installing the Cover over the Universal Connector

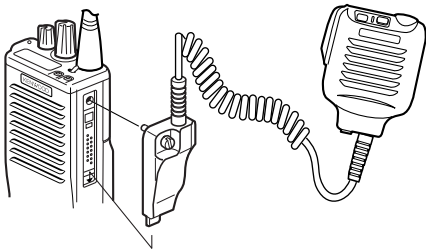
If you are not using the optional KMC-25 speaker/ microphone, install the cover over the universal connector using the supplied 4 x 6 mm screw.

Note: To keep the transceiver water resistant, you must cover the universal connector with the cap or the speaker/ microphone connector.



■ Installing the Optional KMC-25 Speaker/ Microphone

- 1 Insert the guide of the speaker/ microphone connector into the groove of the universal connector.

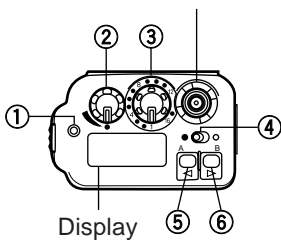


- 2 Secure the connector in place using the attached screw.

Note: The speaker/ microphone keys can be programmed with the programmable auxiliary functions listed on page 9.

GETTING ACQUAINTED

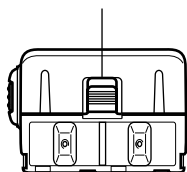
SMA male type
antenna connector



Display

[Top View]

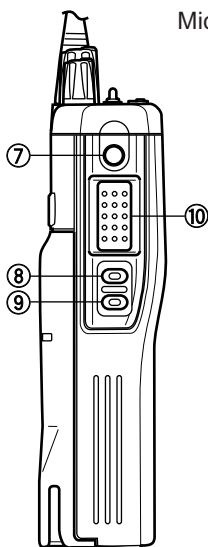
Battery pack
release latch



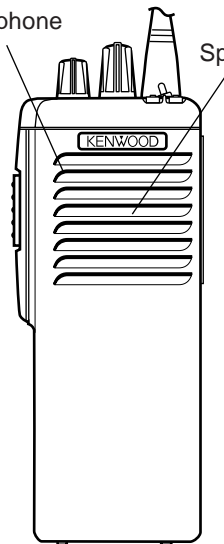
[Bottom View]

Microphone

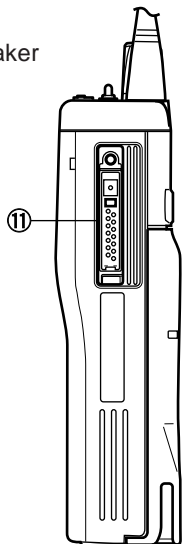
Speaker



[Left Side]



[Front View]



[Right Side]

① TX/ BUSY/ CALL/ Battery low LED

Lights red while transmitting. Lights green while receiving. Lights orange while receiving a 2-Tone/ DTMF call. Flashes red when the battery power is low while transmitting; replace or recharge the battery.

Note: This LED can be disabled by your dealer.

② Power switch/ Volume control

Turn clockwise to switch the transceiver ON. Turn counterclockwise until a click sounds, to switch the transceiver OFF. Rotate to adjust the volume level. Clockwise increases the volume and counterclockwise decreases it.

Note: Your dealer can set a minimum volume level for the **Volume** control.

③ Encoder

Rotate to select a channel. Clockwise increases the channel number and counterclockwise decreases it.

④ Toggle switch

Switch the toggle position to the right (**○**) to activate its programmable function {page 9} and to the left (**●**) to deactivate it. The default function of this switch is “No Function”.

⑤ Top 1

Press this PF (programmable function) key to activate its programmable function {page 9}. The default function of this key is “No Function”.

⑥ Top 2

Press this PF (programmable function) key to activate its programmable function {page 9}. The default function of this key is “No Function”.

⑦ **Orange**

Press this PF (programmable function) key to activate its programmable function {page 9}. The default function of this key is “No Function”.

⑧ **Side 1**

Press this PF (programmable function) key to activate its programmable function {page 9}. The default function of this key is “Monitor”. Also used as an “up” key for various functions.

⑨ **Side 2**

Press this PF (programmable function) key to activate its programmable function {page 9}. The default function of this key is “Lamp”. Also used as a “down” key for various functions.

⑩ **PTT (Push-To-Talk) switch**

Press and hold this switch, then speak into the microphone to call a station.

⑪ **Universal connector**

Connect the optional KMC-25 speaker microphone here. When the KMC-25 speaker/microphone is not connected, cover the connector with the supplied universal connector cover.

■ Display



Icon	Description
	Displays the operating channel number or name, “UNPROG” (when no channel data is programmed on the selected channel), the OST code or name (in OST Select mode), “SCAN” (while scanning), the squelch level (when adjusting the squelch), the scrambler code (in Scrambler Code Select mode), and “CALL” (when receiving a 2-Tone or DTMF call).
	Displays the operating channel number (if programmed by your dealer), P (Priority), tA (Talk Around), and HC (Home Channel); depending on the function being used.
A	Appears when the selected channel is included in the scan sequence.
SCN	Appears while scanning.
MON	Appears while monitoring a channel.
LO	Appears when using low power on the current channel.
OPT	Appears when Operator Selectable Tone is enabled.
AUX	Appears when the optional scrambler board is enabled.

Note: You can invert the segmented displays (not the icons) if a PF key or the toggle switch is programmed with **Invert Display** {page 9}.

PROGRAMMABLE AUXILIARY FUNCTIONS

The PF keys, toggle switch, and Speaker/ Microphone keys can be programmed with the auxiliary functions listed below:

Function Name	Toggle Switch	PF Keys	Speaker/ Microphone Keys
Aux ¹	✓	✓	✓
Channel Down		✓	✓
Channel Name		✓	✓
Channel Up		✓	✓
Delete/Add		✓	✓
Emergency Call ²		✓	✓
Home Channel		✓	✓
Invert Display	✓	✓	✓
Key Lock	✓	✓	✓
Lamp		✓	✓
Low Power	✓	✓	✓
Monitor	✓	✓	✓
Monitor Momentary		✓	✓
No Function	✓	✓	✓
Operator Selectable Tone		✓	✓
Scan	✓	✓	✓
Scrambler ³	✓	✓	✓
Shift	✓	✓	
SP Attenuation			✓
Squelch Level		✓	✓
Squelch Momentary		✓	✓
Squelch OFF	✓	✓	✓
Talk Around	✓	✓	✓

- ¹ This function can be selected only when the scrambler board has not been installed.
- ² This function can be selected only when the ANI board has been installed.
- ³ This function can be selected only when the scrambler board has been installed.

Note:

- ◆ *If your dealer programs “Shift” onto a PF key or the toggle switch, the remaining PF keys can be programmed with an additional function. To use the additional functions, you must first press the **Shift** key, then press the function key you desire. The toggle switch and the key programmed with “Shift” cannot be programmed with an additional function.*
- ◆ *When a function is programmed onto both a PF key and the toggle switch, an error will occur on the PF key and it cannot be used.*

■ Function Descriptions

- **AUX:** Press to turn AUX ON. The dealer selectable optional board will activate. Press again to turn AUX OFF. When AUX is ON, “AUX” appears on the display.
- **Channel Down:** Press to decrease the channel by 1 step. Press and hold to continuously scroll through the channels. Unprogrammed channels will be skipped.

***Note:** Your dealer can program the “Roll Over” (default) or “Dead End” feature. When Roll Over is programmed, pressing **Channel Down** while you are at the lowest channel will cause the transceiver to select the highest channel, and begin the decrease cycle again. When Dead End is programmed, pressing **Channel Down** while you are at the lowest channel will not change the channel number.*

- **Channel Name:** Press to change the display between the channel number and the channel name. Your dealer can program a channel name for each channel with up to 7 characters.

- **Channel Up:** Press to increase the channel by 1 step. Press and hold to continuously scroll through the channels. Unprogrammed channels will be skipped.

***Note:** Your dealer can program the “Roll Over” (default) or “Dead End” feature. When Roll Over is programmed, pressing **Channel Up** while you are at the highest channel will cause the transceiver to select the lowest channel, and begin the increase cycle again. When Dead End is programmed, pressing **Channel Up** while you are at the highest channel will not change the channel number.*

- **Delete/Add:** Press to remove an undesired channel from the scan sequence, or to add a desired channel to the scan sequence. See “SCANNING” on page 16.
- **Emergency Call:** Press and hold this key for the time required (which is pre-programmed by your dealer) to enter Emergency mode. If Emergency Channel Display is activated by your dealer, the emergency channel name will appear on the display and the TX LED (red) will light.
- **Home Channel:** Press to change from the current channel to your home channel. Press again to return to the previous channel, from your home channel.
- **Invert Display:** Press to invert both segmented displays (the icons do not change). This allows channel numbers, names, and other information to be easily read when you use the transceiver in such a way as to have the display upside down.
- **Key Lock:** Press to lock most of the keys on the transceiver. Press again to unlock the keys. See “Key Lock” on page 23.

- **Lamp:** Press to turn the display backlight ON. The backlight will remain ON for 5 seconds. Pressing any key other than **Lamp** will reset the lamp timer, causing it to remain ON for 5 seconds from the time you pressed the new key. Pressing the **Lamp** key while the lamp is ON will turn the lamp OFF.
- **Low Power:** Press to change the output power of the current channel from high to low. Pressing this key again will return the channel to high power. It is recommended to use low power whenever possible (if you are in range of the other transceiver) to conserve your battery power. When using low power, “LO” appears on the display.

***Note:** You cannot change a channel from low power to high power if your dealer has set the channel for use with low power.*

- **Monitor:** Press to turn the signalling squelch {page 19} of the current channel OFF (if signalling has been set up on the channel). Depending on the squelch level {page 15}, you will be able to hear a signal or background noise if there is no signal. Press again to reactivate signalling squelch. While monitor is active, “MON” appears on the display.
- **Monitor Momentary:** Press and hold to turn the signalling squelch {page 19} of the current channel OFF (if signalling has been set up on the channel). Depending on the squelch level {page 15}, you will be able to hear a signal or background noise if there is no signal. Release to reactivate signalling squelch. While monitor is active, “MON” appears on the display.
- **No Function:** No function has been programmed onto the key.
- **Operator Selectable Tone:** Press to enter OST Code Select mode. See “QUITE TALK (QT) AND DIGITAL QUIET TALK (DQT)” on page 22.

- **Scan:** Press to start the scan sequence. Press again to stop scanning. See “SCANNING” on page 16.
- **Scrambler:** Press to turn the scrambler ON. Press again to turn it OFF. Press and hold for 2 seconds to enter Scrambler Code Select mode. See “Voice Scrambler” on page 25.
- **Shift:** Press and hold, then press a second PF key to access the second function of the selected PF key.
- **SP Attenuation:** Press to set the speaker volume of the optional KMC-25 to minimum. Press again to return control of the volume to the **Volume** control of the KMC-25 speaker/ microphone.
- **Squelch Level:** Press to enter Squelch Level mode. See “Adjusting the Squelch” on page 15.
- **Squelch Momentary:** Press and hold to deactivate the squelch (unmute the speaker). Release to reactivate the squelch. While squelch is OFF, “MON” appears on the display and the BUSY LED (green) lights.
- **Squelch OFF:** Press to deactivate the squelch (unmute the speaker). Press again to reactivate the squelch. While squelch is OFF, “MON” appears on the display and the BUSY LED (green) lights.
- **Talk Around:** Press to activate Talk Around mode. Press again to exit Talk Around mode. You can use this feature to talk directly to another transceiver that is within the transmitting range of your transceiver. While Talk Around is active, tA appears on the display.

■ Switching Power ON/OFF

Turn the **Power** switch/ **Volume** control clockwise to switch the transceiver ON.

Turn the **Power** switch/ **Volume** control counterclockwise to switch the transceiver OFF.

■ Adjusting the Volume

Rotate the **Power** switch/ **Volume** control to adjust the volume. Clockwise increases the volume and counterclockwise decreases it. Your dealer may have set a minimum volume level for your transceiver.

■ Selecting a Channel

Rotate the **Encoder** or press the keys programmed with **Channel Up** and **Channel Down** to select a channel. There are 16 channels on this transceiver. Your dealer can program each channel with the following features:

- Transmit/ Receive Frequencies
- QT/DQT Tone (for transmitting/ receiving) {page 22}
- Channel name (up to 7 digits) {page 10}
- Option signalling (2-Tone/ DTMF) {pages 19 and 20}
- PTT ID (beginning/ end of transmission) {page 21}
- BCL (Busy Channel Lockout) {page 24}
- High/ low transmit power (default is high) {page 12}
- Add to or remove from scan (default is add) {page 16}
- Voice Scrambler (only with optional board) {page 25}

Additionally, your dealer can program a Priority channel, Home channel, and Emergency channel.

■ Making a Call

- 1 Select the desired channel {page 14}.
- 2 Use the key programmed as **Monitor** or **Squelch OFF** to determine whether or not the current channel is being used.
 - If the channel is busy, wait until it becomes free.
- 3 Press and hold the **PTT** switch, then speak into the microphone in your normal voice.
 - For best results, hold the microphone approximately 3 to 4 cm (1 1/2 inches) from your lips.
- 4 Release the **PTT** switch to receive.

■ Adjusting the Squelch

You can adjust the squelch level to hear weaker signals or to eliminate background noise. At a setting of “0” (the lowest setting), you can hear background noise and weak signals. At a setting of “15” (the highest setting), you will not hear any background noise, and you will hear only very strong signals. Adjust the squelch to your desired level.

- 1 Press the key programmed as **Squelch Level** to enter Squelch Level mode.
 - The squelch level appears on the display
- 2 Press the **Side 1** and **Side 2** keys to adjust the squelch level.
 - Pressing the **Side 1** key will increase the squelch level. Pressing the **Side 2** key will decrease the squelch level.
- 3 Press any key other than **Side 1** and **Side 2** to set the selected squelch level and exit Squelch Level mode.

SCANNING

If the Scan function is programmed, channels can be scanned by pressing the key programmed as **Scan**. Scan will monitor all channels that are added to the scan sequence. Channels added to the scan sequence have an “A” indicator on the display when the channel is selected.

Note: *There must be at least 2 channels added to the scan sequence in order for Scan to operate.*

- When you begin scanning, by pressing the **Scan** key, the SCN indicator and “SCAN” or the revert channel (depending on dealer programming), appear on the display and a confirmation tone sounds.

When a signal is received on a channel, scanning halts and the channel number (or name) appears. To respond to the call, press and hold the **PTT** switch, then speak into the microphone. Scan will resume after an adjustable time delay if the **PTT** switch is released and no further signal is received.

- When you end scanning, by pressing the **Scan** key again, two confirmation tones sound.

Press the key programmed as **Delete/Add** to add a channel to the scan sequence if it is not already added.

- “A” appears on the display.

Press the key programmed as **Delete/Add** to remove a channel from the scan sequence if it is already added.

- “A” no longer appears on the display.

Note: *Press and hold the Delete/Add key during scan to temporarily add or remove a channel. The channels will return to their original status when you stop Scan. (You must hold the Delete/Add key for the time programmed by your dealer.)*

■ Priority Scan

A priority channel must be programmed in order for Priority Scan to operate. A “P” appears on the display when the priority channel is selected.

During Scan, the transceiver automatically reverts to the priority channel when a signal is received on it, even if a signal is being received on your current channel.

Note:

- ◆ *Your dealer programs the amount of time it takes for the transceiver to check for a signal on the priority channel.*
- ◆ *If programmed by your dealer you can temporarily add or delete the priority channel from the scan sequence.*
- ◆ *Your dealer can program Scan to cancel the priority channel QT/DQT tone (if a tone is set up on the channel) during Scan so that all calls on the priority channel will be heard.*

■ Revert Channel

The revert channel is the channel your transceiver changes to when you press the **PTT** switch to transmit during Scan.

Your dealer can program the type of revert channel to be used by your transceiver from the following choices:

- **Last Called (Default):** Changes back to the last channel you received a call on, even if scanning has resumed.
- **Last Used:** Changes back to the last channel you transmitted on. However, if you press the **PTT** switch while you are on a different channel, but you are receiving on that channel and scanning has not yet resumed, you will transmit on the new channel.
- **Selected & Talk Back:** Changes back to the channel you selected with the **Encoder** before beginning scanning. However, if you press the **PTT** switch while you are on a different channel, but you are receiving on that channel and scanning has not yet resumed, you will transmit on the new channel.
- **Selected:** Changes back to the channel you selected with the **Encoder** before beginning scanning.
- **Priority & Talk Back:** Changes back to the priority channel. However, if you press the **PTT** switch while you are on a different channel, but you are receiving on that channel and scanning has not yet resumed, you will transmit on the new channel.
- **Priority:** Changes back to the priority channel.

■ 2-Tone Signalling

Note:

- ◆ *This transceiver is only capable of decoding 2-Tone signals. It cannot encode a 2-Tone signal.*
- ◆ *A 2-Tone call will be cancelled if you change the channel or turn Scan ON.*

2-Tone Signalling is either activated or deactivated by your dealer. Using this function, you will only hear calls that are intended for you to hear.

When you receive a call with a 2-Tone signal that matches the two tones set up in the transceiver, squelch opens and you will hear the call.

- When a correct 2-Tone signal is received, the CALL LED (orange) will flash and the display will alternate between “CALL” and the current channel number (or name).

While responding to the call by pressing the **PTT** switch and speaking into the microphone, the TX LED (red) will light, and only the channel number (or name) will appear on the display.

- When you release the **PTT** switch, the LED will flash either red or orange, and the display will either alternate between “CALL” and the channel number (or name) or it will only display “CALL”. This depends on how your dealer sets up 2-Tone Signalling.
- If your dealer programmed Transpond for 2-Tone Signalling, your transceiver will automatically send an acknowledgment signal to the station that called you.
- If your dealer programmed Tone Alert for 2-Tone Signalling, a tone will sound when the correct 2-Tone signal is received.

■ DTMF Signalling

Note: A DTMF call will be cancelled if you change the channel or turn Scan ON.

DTMF Signalling is either activated or deactivated by your dealer. Using this function, you will only hear calls that are intended for you to hear.

When you receive a call with a DTMF code that matches the code set up in the transceiver, squelch opens and you will hear the call.

- When a correct DTMF code is received, the CALL LED (orange) will flash and the display will alternate between “CALL” and the current channel number (or name).

While responding to the call by pressing the **PTT** switch and speaking into the microphone, the TX LED (red) will light, and only the channel number (or name) will appear on the display.

- When you release the **PTT** switch, the LED will flash either red or orange, and the display will either alternate between “CALL” and the channel number (or name) or it will only display “CALL”. This depends on how your dealer sets up DTMF Signalling.
- If your dealer programmed Transpond for DTMF Signalling, your transceiver will automatically send an acknowledgment signal to the station that called you.
- If your dealer programmed Tone Alert for DTMF Signalling, a tone will sound when the correct DTMF code is received.

■ Dead Beat Disable (DBD)

Depending on how your dealer programs your transceiver, when you receive a call containing a DBD code you may not be able to transmit.

- When a DBD code is received, a tone will sound.

DBD is cancelled when you receive a call with a DBD reset code.

■ PTT ID

PTT ID is either activated or deactivated by your dealer. Using this function, you can send a DTMF tone when you press the **PTT** switch, release the **PTT** switch, or both.

- When the PTT BOT is activated, a DTMF tone is automatically transmitted with your call when you press the **PTT** switch.
- When the PTT EOT is activated, a DTMF tone is automatically transmitted when you release the **PTT** switch.

QT and DQT tones are encoded tones that help to relieve you of unwanted calls. Calls that are received on your channel that do not have the proper tone will not be heard. You will only hear calls that are received if they carry the tones that match those set up in your transceiver.

Likewise, other persons will not hear your transmissions unless their transceivers have a QT/DQT tone that matches yours.

Your dealer will program tones onto the channels. However, you can change those tones by following the instructions below.

***Note:** Depending on dealer programming, if you change the channel, or turn the transceiver power OFF and then back ON, your tones may revert back to the original tones set up by your dealer.*

- 1 Press the key programmed as **Operator Selectable Tone** to enter OST Code Select mode.
- 2 Press the **Side 1** and **Side 2** keys to select the desired code.
 - Pressing the **Side 1** key will increase the value. Pressing the **Side 2** key will decrease the value.
- 3 Press the **Operator Selectable Tone** key again to set the selected value and exit OST Code Select mode.
 - “OPT” appears on the display. (If you selected “OFF”, “OPT” does not appear.)

■ Key Lock

Press the key programmed as **Key Lock** to activate the Key Lock function. All keys other than those listed below will not perform their operations. This is useful function to avoid accidentally pressing a key.

The following keys/ switches can be used while Key Lock is active:

- PTT switch
- Toggle switch
- Encoder

PF keys programmed with the following functions can be used while Key Lock is active:

- Emergency Call
- Lamp
- Monitor
- Monitor Momentary
- Shift
- SP Attenuation
- Squelch OFF
- Squelch Momentary

When you press a locked key, “LOCKED” appears on the display momentarily, and an error tone sounds.

To unlock the keys, press the **Key Lock** key again.

■ Time-out Timer (TOT)

The TOT is used to automatically inhibit transmission after a specified time elapses. If the **PTT** switch is held down for longer than the programmed time, the transceiver will stop transmitting and a tone will sound. Release the **PTT** switch, then press it again to continue transmitting.

- A warning tone will sound before the TOT expires if programmed by your dealer.

Note:

- ◆ *TOT settings are programmed by your dealer. The default transmit inhibit time is 60 seconds.*
- ◆ *Depending on dealer programming, you may have to wait for up to 60 seconds before you can resume transmitting after transmission is inhibited.*
- ◆ *Depending on dealer programming, to prevent the TOT from expiring, you may have to stop transmitting for up to 15 seconds before resuming. If you resume too soon, the TOT will not reset; the timer will continue counting down from where it left off.*

■ Busy Channel Lockout (BCL)

When activated by your dealer, you will not be able to transmit while there is a signal present on the current channel. You must either select a different channel or wait until there is no signal present in order to transmit.

- If you press the **PTT** switch while a signal is present on the current channel, a tone will sound and you will not be able to transmit.
- To determine if there is a signal present on your channel, press a key programmed with one of the following functions: **Monitor**; **Monitor Momentary**; **Squelch OFF**; or **Squelch Momentary**.
- If programmed by your dealer, you can override the BCL by pressing the **PTT** switch two times within 0.5 seconds.

■ Voice Scrambler

You can use the Voice Scrambler feature to make your calls private. Your calls will only be understood by other persons who are also using the Voice Scrambler feature.

To activate the Voice Scrambler, press the key programmed as **Scrambler**.

- “AUX” appears and flashes

To deactivate the Voice Scrambler, press the **Scrambler** key again.

You can also change the scrambler code that is set up in the current channel:

- 1 Press the key programmed as **Scrambler** to enter Scrambler Code Select mode.
- 2 Press the **Side 1** and **Side 2** keys to select the desired code.
 - Pressing the **Side 1** key will increase the value.
Pressing the **Side 2** key will decrease the value.
- 3 Press the **Scrambler** key again to set the selected value and exit Scrambler Code Select mode.

AUDIBLE USER FEEDBACK TONES

The transceiver emits various tones to indicate the transceiver's operating status:

- **Power ON Tone:** Sounds when you turn the transceiver power ON.
- **Key Operation Tone:** Sounds when you activate a function by pressing a key or moving the toggle switch to the right (**O**). Also sounds when you reach the lowest and highest channel while rotating the **Encoder**.
- **End of Operation Tone:** Sounds when you deactivate a function by pressing a key or moving the toggle switch to the left (**●**).
- **Operation Error Tone:** Sounds when you press a key that has no function programmed and when you press a locked key while Key Lock is enabled or during OST Select mode.
- **Sequence Error Tone:** Sounds when you select a channel with the **Encoder**, that is not programmed.
- **Transmission Inhibit Tone:** Sounds when you press the **PTT** switch when it is illegal for you to transmit (when the TOT expires, when there is no transmit frequency, etc.).
- **TOT Warning Tone:** Sounds before the TOT expires.
- **Selective Call Alert Tone:** Sounds when you receive an Optional Signalling call that matches your pre-programmed signalling code.