

**Note:** The call channel may only be programmed in 20 channel mode.

## 10 Scanning [C/VSCAN Button and D/MSCAN Button]

The following buttons have special functions during scanning

Button	During dial scanning	During memory scanning
6/LOCK	Toggly switches 1 MHz band scan and partial band scan	Toggly switches all memory scan and 1 band memory scan
7/+/-/BS	Switches pause scan and busy scan(B is indicated on the display during busy scan)	Switches pause scan and busy scan(B is indicated on the display during busy scan)
8/REV/▼	Decreases the frequency by one step and scans downwards	Decreases the memory address number by one step
9/SHIFT/▲	Increases the frequency by one step and scans upwards	Increases the memory address number by one step

### Information

No indication is displayed for the above functions except the busy scan

22

## ① Scanning Method

Either pause scan or busy scan can be selected

### • Pause scan

Pause scan ceases scanning when a signal is received. Scanning will then resume five seconds later or when the signal disappears, whichever occurs first.

### • Busy scan

Busy scan stops scanning when a signal is received, but scanning resumes 4.5 seconds after the signal disappears (The Transceiver is initially set to pause scan)

## ② Various Scanning

This Transceiver is capable of following scans

### • Dial-frequency scan

#### (1) 1 MHz band scan

To scan the band from one end to the other within 1 MHz

#### (2) Partial band scan

Scans only a selected group of frequencies

### • Memory frequency scan

#### (1) All memory scan

#### (2) MS.M memory scan

### NOTE:

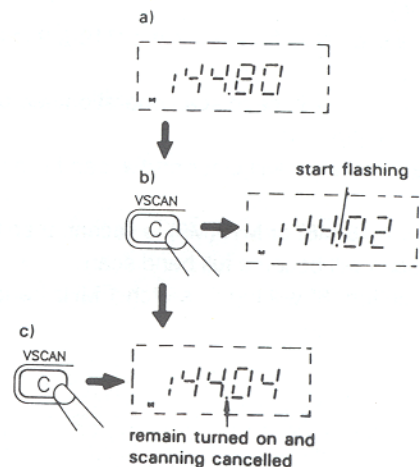
Memory frequency scan can be operated with battery save function as save memory scan.

## ③ Operation

### • Dial-frequency scan

#### (1) 1 MHz band scan

- Set the Transceiver to the dial-frequency mode.
- Press the C/VSCAN button. A short beep tone will be generated and the scanning will start at the displayed frequency. The decimal point keeps flashing during scanning operation.
- Press the C/VSCAN button again to cancel the scanning.



23

### Information

- Press either the \*/MR/ENT button or C/VSCAN button to cancel scanning. The frequency displayed as button is depressed becomes the operating frequency.
- Be sure that the Transceiver is in the dial-frequency mode before starting the scan, especially right after the memory mode is used.

### (2) Partial Band Scan

- Store scan start frequency into M18(M8 in 20 channel mode)
- Store scan stop frequency into M19(M9 in 20 channel mode)
- Start the 1 MHz band scan operation(see page 23)
- Press button "6"
- The transceiver will enter partial band scan

**Note:**If either M18(M8) or M19(M9) is vacant, then the partial band scan will become full band scan.  
Press button "6" will toggly switch 1 MHz band scan and partial band scan.

### • Memory frequency scan

This function allows you to scan frequencies programmed in the memory. Two types memory scans are available;

- All memory scan: to scan every memory frequency in 20 or 40 channel mode.
- MS.M scan: To scan signified memory frequencies.

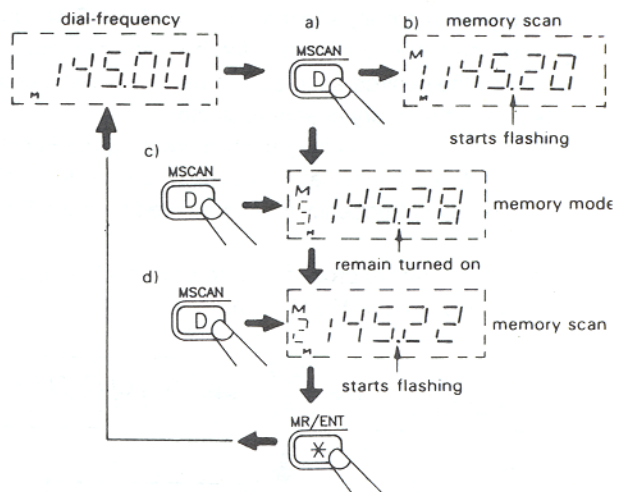
### Information

Memory frequency scan can be operated with battery save function as save memory scan, scanning with intervals of 600ms.

### (1) All memory scan

This function allows you to scan the memory frequencies. A vacant address number is automatically skipped.

- Press the D/MSCAN button.
- The memory scanning will start at the following memory address number used lastly. The decimal point starts flashing and keeps flashing scanning operation.
- Press the D/MSCAN button again to cancel the memory scan. The Transceiver will enter the memory mode.
- The memory scan resumes by pressing the D/MSCAN button again.

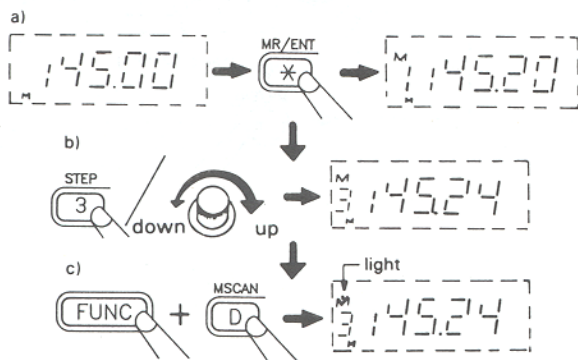


## (2) MS.M scan

This function allows you to scan the specified memory frequencies only.

### ① Setting the memory address number for MS.M scan.

- Press the \*/ MR /ENT button for the memory mode.
- Display the desired address number either with numeral button or the rotary channel selector.
- Press the D/MSCAN button while pressing the Function button "▼" will be indicated above "M" on the display and the displayed frequency is programmed for the MS.M scan.
- Repeat the above procedure and program the desired frequencies for the MS.M scan.

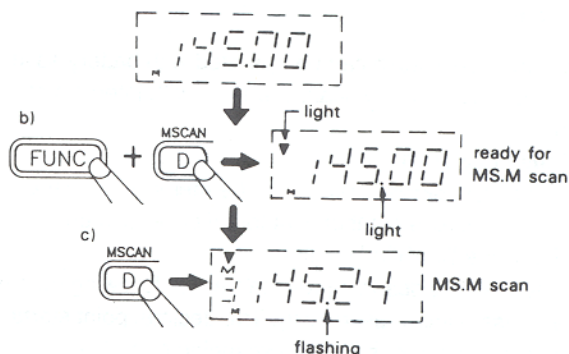


#### NOTE:

Repeat the above procedure to delete the programmed frequency for the MS.M scan. "▼" above "M" will disappear.

## ② Operation I.

- Set the Transceiver to the dial-frequency mode. Press the D/MSCAN button while pressing the Function button "▼" will be indicated above "M" on the display and the Transceiver is now ready for MS.M scan.
- Press the D/MSCAN button. The MS.M scan will start.

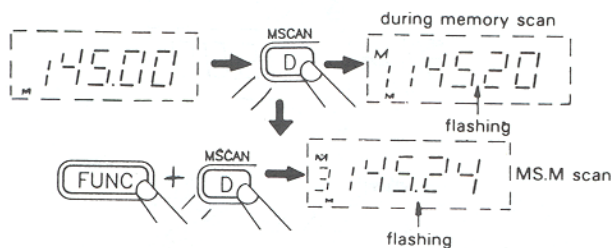


#### NOTE:

The MS.M scan is only available when the MS.M scan frequencies have been programmed.

## ③ Operation II

- Press the D/MSCAN button for memory scan.
- Press the D/MSCAN button while pressing the Function button during memory scanning. The MS.M scan will start.



### Information

The MS.M scan and all MS.M scan can be cancelled by depressing the D/MSCAN button while pressing the Function button. The memory scan will start.

#### NOTE:

- "▼" above "M" on the display is an indicator for MS.M scan.
- The MS.M scan is only available when the MS.M scan frequencies have been programmed.
- In memory frequency scan, either the all memory or MS.M scan can be confined to single memory bank.
- There are four banks in 40 channel mode
  - bank 0 : M0 - M9
  - bank 1 : M10 - M19
  - bank 2 : M20 - M29
  - bank 3 : M30 - M39
- There are two banks in 20 channel mode
  - bank 0 : M0 - M9
  - bank 1 :  $\bar{M}0$  -  $\bar{M}9$

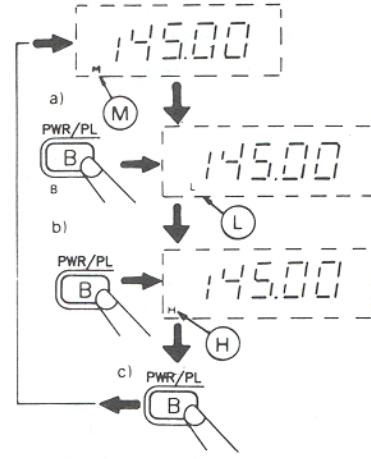
## 11 Switching the Transmit Power [B/PWR/PL Button]

This is to switch the transmit power. Three power levels are available for the H/H Transceiver. Select high, middle or low power depending on your purpose.

High power (H is displayed).....5.0W  
 Middle power (M is displayed).....2.5W  
 Low power (L is displayed).....0.35W

### Procedure

- Press the B/PWR /PL button to switch transmit power. The "M" on the display will be replaced by "L" indicating that the transmit power is switched to low.
- Press the B/PWR /PL button again for high power "H" will be displayed.
- Press the B/PWR /PL button again. The middle power will be returned.



### Information

The Transceiver is initially set to the middle at the factory.

## 12 Dual-Watch Operation [1/Dual Button]

This function allows you to watch two different frequencies. The Transceiver is capable of following types of dual-watch operation.

- Listen on the dial-frequency and the memory frequency under M1.
- Listen on the dial-frequency and one of the memory frequencies.
- Listen on the dial-frequency and a memory frequency under scanning.

### Information

- The word "DUAL" is indicated on the display during dual-watch operation.
- The dial-frequency can be changed during dual-watch operation.
- During dual-watch operation, the Transceiver listens on memory frequency once every three seconds and instantaneously displays its frequency.
- Dual-watch operation pauses while the memory frequency is being received.
- When a signal is received on the dial-frequency during dual-watch operation, the signal will be heard interruptedly as the Transceiver leaves the dial-frequency once every three seconds.
- Rotate the squelch control fully counterclockwise to pause the dual-watch operation with the memory frequency to listen.

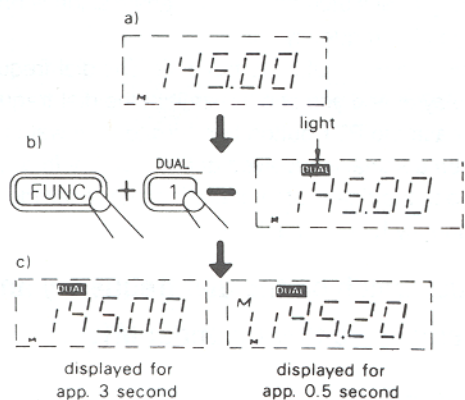
### NOTE:

- During dual-watch operation, transmission is only available at the dial-frequency.
- Press the PTT button to transmit. The dial-frequency is displayed and you can transmit at the dial-frequency. Release the PTT button to return to dual-watch.
- When a signal is received at the memory frequency, release the dual-watch operation and recall the memory frequency for communication.

### ① Dual-watch on the dial-frequency and the memory frequency under M1.

### Procedure

- Set the Transceiver to the dial-frequency mode.
- Press the 1/DUAL button while pressing the Function button. A word "DUAL" will appear on the display to indicate the dual-watch operation.
- Press the \*/ENT button "DUAL" will disappear and the dual-watch will be cancelled.

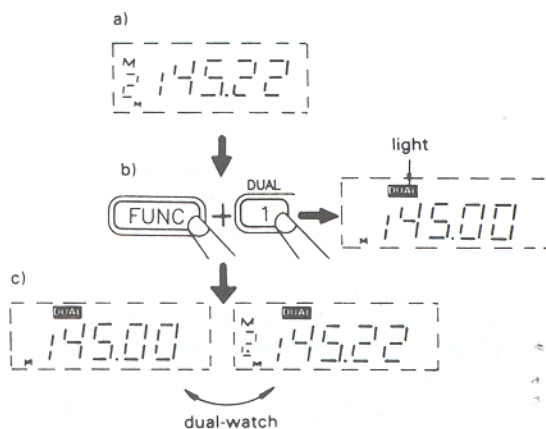


**NOTE:**  
If no frequency has been stored in memory address number M1, the dual-watch operation is unavailable. You will hear a low-toned short beep when you press the 1/DUAL button informing you an incorrect entry.

## ② Dual-watch on the dial-frequency and a memory frequency. (or call frequency)

### Procedure

- Recall a memory frequency you wish to use in the dual-watch.
- Press the 1/DUAL button while pressing the function button. A word "DUAL" will appear on the display to indicate the dual-watch operation.
- The display will alternately indicate the dial-frequency and a select memory frequency.



30

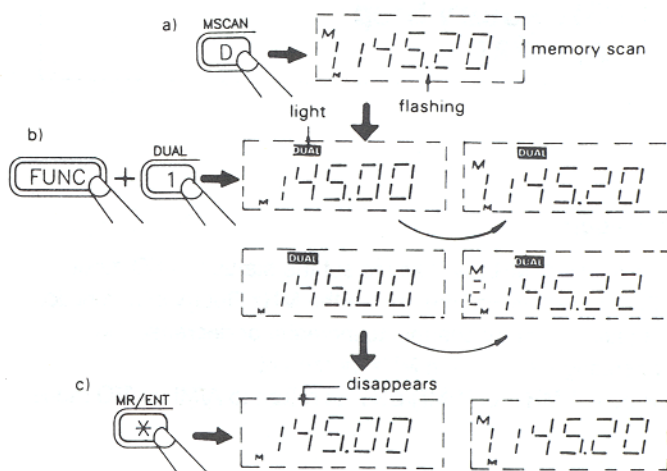
### NOTE:

- If no frequency has been stored in memory, the dual-watch operation is unavailable. You will hear a low-toned short beep when you press the 1/DUAL button informing you an incorrect entry.
- In dual-watch operation call frequency is considered as one of memory frequencies. That is, you can have dual-watch operation to listen on dial-frequency and call frequency.

## ③ Dual-watch on the dial-frequency and a memory frequency under scanning in sequence.

### Procedure

- Set the Transceiver to the memory scan mode.
- Press the 1/DUAL button while pressing the Function button. A word "DUAL" will appear on the display to indicate the dual-watch operation. The display will sequentially indicate the dial-frequency and the memory frequencies under scanning one by one.
- Press either the C/VSCAN button or \*/ MR /ENT button to cancel the dual-watch operation and to set the dial-frequency mode. The Transceiver will be set to either the dial-frequency mode or the memory mode depending on the condition at which the button is depressed.

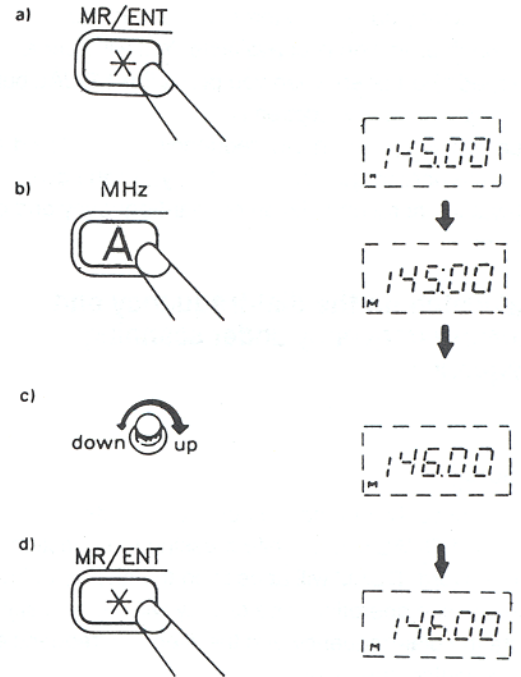


31

## 13 MHz Rotary Step [A/MHz]

### Procedure

- Press the "\*MR/ENT" key to set the status in VFO mode.
- Press the "A/MHz" the enable the MHz Rotary step function.
- Rotate the rotary channel to increase or decrease the operating frequency in MHz increment.
- Press "A/MHz" or "\*MR/ENT" to return to A/MHz VFO mode.



32

## 14 Changing the Frequency Step [3/STEP Button]

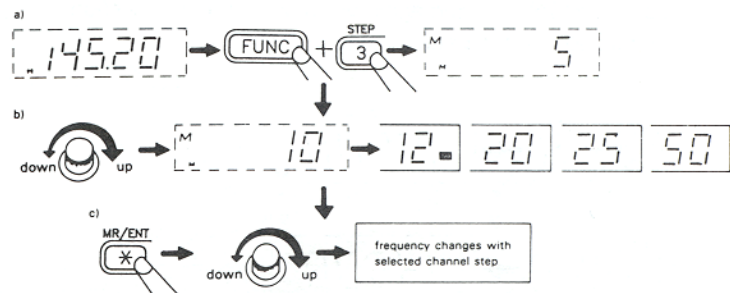
You can set the Transceiver's step rate to 5kHz, 10kHz, 20kHz, 25kHz or 50kHz.

### Procedure

- Press the 3/STEP button while pressing the Function. The frequency display will disappear and replaced by the current step rate.
- Rotate the rotary channel selector. The six step rates will be sequentially indicated.
- Select the desired step rate. Then press the \*/MR/ENT button to return to the previous dial-frequency.

### Information

- When the step rate is set to 25kHz, 12.5kHz, the kHz digit of the dial-frequency will be shown in a small black box on the right side of the display.
- The step rate is initially set to 10kHz at the factory.



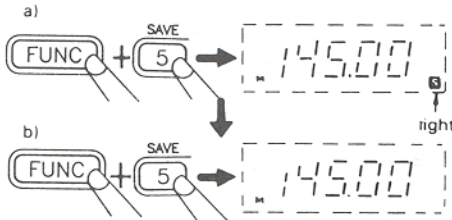
33

## 15 Battery-Save Function [5/SAVE Button]

This function allows you to reduce the current drain to 1/3 during receiver standby. The receiver will be activated once every single second.

### Procedure

- Press the 5/SAVE button while pressing the Function button. A "S" will appear on the display to indicate that the battery-save function is enabled.
- Press the 5/SAVE button again while pressing the Function button to release the battery saver.



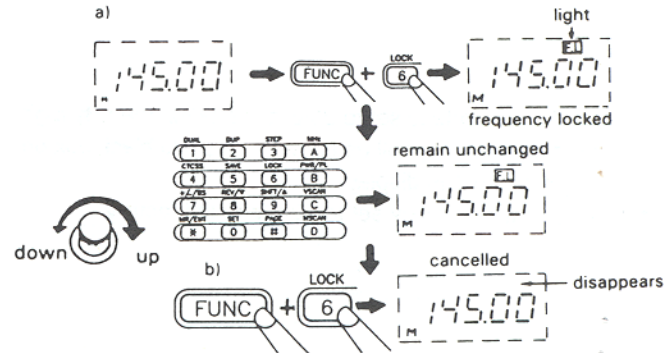
**NOTE:**  
The battery saver is disabled during dual-watch operation and scanning.

## 16 Frequency Lock [6/LOCK Button]

This feature allows you to lock the frequency and operating mode to prevent improper operation. You can also use this feature during scanning and dual-watch operation.

### Procedure

- Press the 6/LOCK button while pressing the Function button. A "FL" will appear on the display to indicate that the frequency and operating mode is locked.
- Press the 6/LOCK button again while pressing the Function button to unlock them.



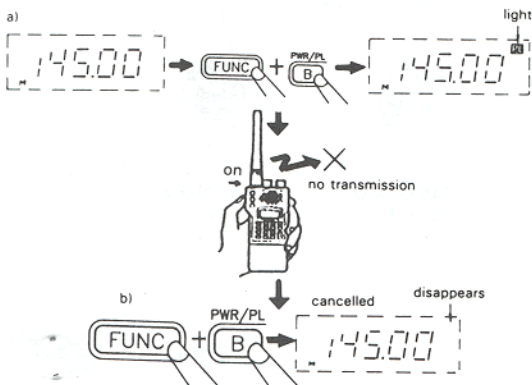
34

## 17 PTT Lock [B/PWR/PL Button]

This function allows you to disable the PTT button to reduce the chance of accidental transmission.

### Procedure

- Press the B/PWR/PL button while pressing the Function button. A "PL" will appear on the display and the PTT button is disabled.
- Press the B/PWR/PL button again while pressing the Function button to enable the PTT button.

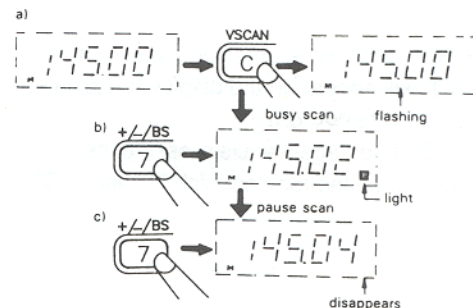


## 18 Switching Pause Scan and Busy [7/+/-/BS Button]

This function allows you to select either pause scan or busy scan. The Transceiver is initially set to pause scan at the factory. (see 10 Scanning in page 22)

### Procedure

- Set the Transceiver to the scanning mode.
- Press the 7/BS button during scanning, a "B" will appear on the display to indicate the busy scan.
- Press the 7/BS button again to return to the pause scan, the "B" will disappear.



35

## 19 Tone Squelch Control [4/CTCSS Button]

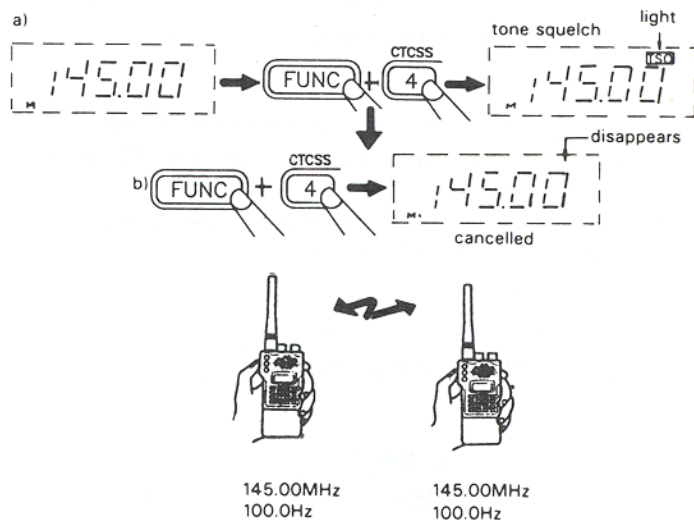
Tone squelch operation is available when an optional tone squelch unit CTS145 is installed.

### NOTE:

- (1) Communication between stations incapable of tone squelch operation or having different tone frequencies is unavailable.
- (2) Select and program the required tone frequency before attempting tone squelch operation.

### Procedure

- a) Press the 4/CTCSS button while pressing the Function button "T" and "SQ" will appear on the display to indicate that the tone squelch is turned on.
- b) Press the 4/CTCSS button again while pressing the Function button to disable the tone squelch "T" and "SQ" will disappear.



### NOTE:

- (1) "T" and "SQ" will be displayed even though the tone squelch unit CTS145 is not installed.

TO set the CTCSS (PL) tone frequency:

1. Press [FUNC]+[SET], then [CTCSS].
2. Dial the CTCSS tone frequency.
3. Press [MR/ENT]. To activate the tone; (also see next page.)
4. Press [FUNC]+[+/-/BS] to enable repeater offset.
5. Press [FUNC]+[CTCSS] to turn on CTCSS encode.

## 20 Special Functions with SET Button [0/SET Button]

Press the 0/SET button while pressing the Function button to enter the set mode in the set mode, special functions listed in the table below are available.

### NOTE:

- (1) A "M" will be indicated on the display when the Transceiver is in the set mode, However, there are no indicators on the display for special functions.
- (2) Press the \*/MR/ENT button to return to the dial-frequency mode. Repeat the same procedures to release special functions.

Button	Special functions in set mode
0/SET	Muting the buzzer
1/DUAL	Disabled (low beep tone)
2/DUP	Disabled (low beep tone)
3/STEP	Switching the 100 KHz and 1 MHz channel step (when the channel selector rotated while pressing the function button)
4/CTCSS	Recalling the tone frequency
5/SAVE	Turning on/off the Auto-Power Off (APO)
6/LOCK	Enabling and disabling the rotary channel selector when frequency lock is turned on
7/+/-/BS	Disabled (low beep tone)
8/REV/▼	Disabled (low beep tone)
9/SHFT▲	Disabled (low beep tone)

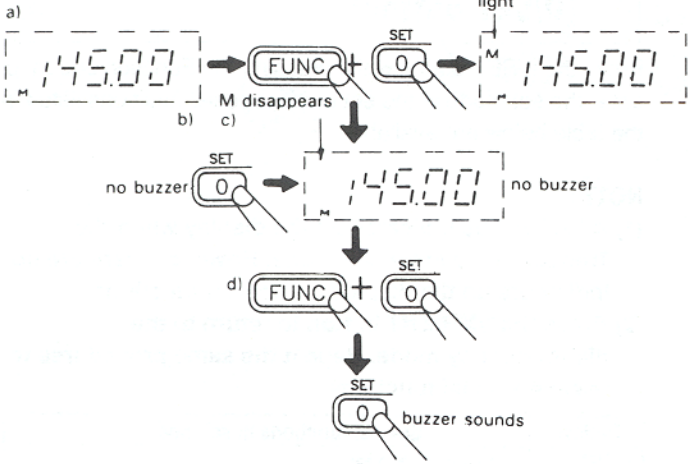


**Procedure**

- Press the 0/SET button while pressing the Function button. A "M" will appear on the display to indicate the set mode.
- Press the 0/SET button.
- The buzzer is muted and pressing a button will not generate any sounds.
- Press the 0/SET button while pressing the Function button and then press the 0/SET button again by itself to enable the buzzer.

**NOTE:**

- The display does not indicate whether the buzzer is muted or not.



**Muting the buzzer**

The H/H Transceiver produces the following sounds.

- Beeping alarm.....generated during Auto-Power Off operation and when receiving signals during pager operation.
- Low-toned beep..... indicates improper key entry.
- High-toned short beep... indicates proper key entry.

**① Recalling the tone frequency**

You can select any one of thirty-eight tones which have been programmed in the microprocessor. The selected tone frequency can be stored in memory.

**Available Tone Frequencies (in Hz)**

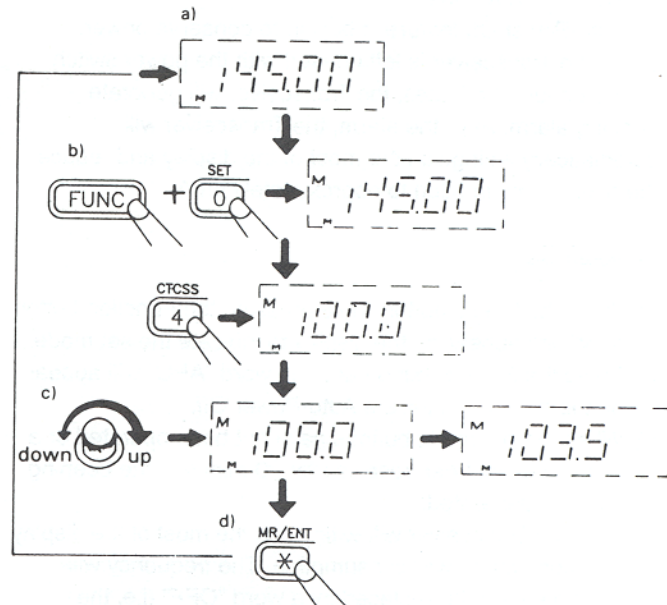
67.0	71.9	74.4	77.0	79.7	82.5	85.4	88.5
91.5	94.8	97.4	100.0	103.5	107.2	110.9	114.8
118.8	123.0	127.3	131.8	136.5	141.3	146.2	151.4
156.7	162.2	167.9	173.8	179.9	186.2	192.8	203.5
210.7	218.1	225.7	233.6	241.8	250.3		

**NOTE:**

- This feature is only available when an optional tone squelch unit CTS145 is installed.

**Procedure**

- Press the 0/SET button while pressing the Function button. A "M" will appear on the display to indicate the set mode.
- Press the 4/CTCSS button. The dial-frequency on the display will disappear and be replaced by a tone frequency. (88.5Hz) is initially set at the factory.
- Rotate the channel selector for a desired tone frequency.
- Press the \*/MR/ENT button to complete the setting. The previous mode will be returned.



## ② Auto-Power Off

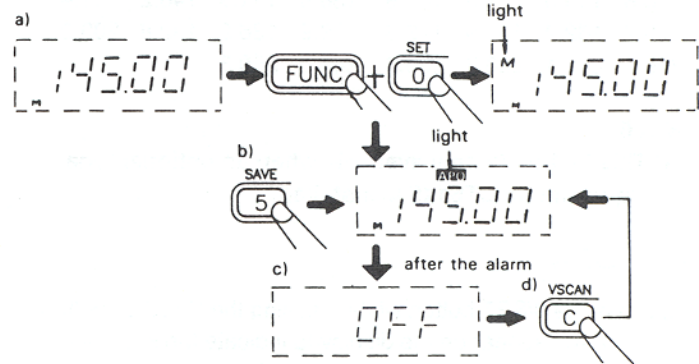
An Auto-Power Off feature is built in to conserve power. When the Transceiver is left unused with the power switch turned on for 30 minutes, the Transceiver will generate beeping alarm. After the alarm, the Transceiver will automatically extinguish the most of the display and reduce the power consumption to approximately 5mA.

### Procedure

- Press the 0/SET button while pressing the Function button. A "M" will appear on the display to indicate the set mode.
- Press the 5/SAVE button and the word "APO" will appear on the display to indicate Auto-Power Off.
- When the operating buttons have not been operated or a signal has not been received for 30 minutes, the beeping alarm is generated.
- The H/H Transceiver will extinguish the most of the display to reduce the power consumption. The frequency will disappear and be replaced by a word "OFF" (i.e. the Transceiver is in the sleep standby mode.)
- Press the C/VSCAN button to release sleep standby. The power will be turned on and the Auto-Power Off timer will be extended for another 30 minutes. i.e. the Transceiver returns to the condition of (b).

### NOTE:

- When the "OFF" replaces the frequency on the display, both the receiver and transmitter are disabled.
- Although the Auto-Power Off function enables to reduce the power consumption to a minimum, make sure that the power switch is turned off when you finish operation.
- Every operating button is disabled in the sleep standby mode except the C/VSCAN button.



40

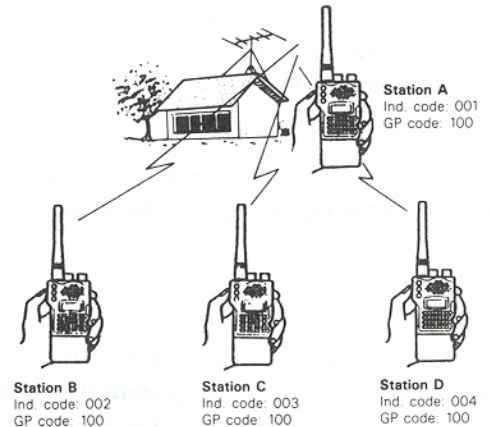
## 21 Pager and Code Squelch [#/PAGE Button]

This feature enables you to page one specified station (individual paging) or all group stations (group paging) over the Transceiver with built-in circuit.

### NOTE:

**Individual code and group code, each with 3 figures, must be programmed before the operation. Pager and code squelch operation is only available when they are programmed.**

### Example:



An individual code and group code have been respectively programmed for Station A through D.

#### • To call stations from Station A.

Recall a group code and press the PTT button. At the Station B through D, a beep sound will be generated and "M2 C100" will appear on the display to indicate that they have been paged.

#### • To call Station B from Station A.

Program an individual code of Station B for address number M1 and press the PTT button. At Station B, A beep sound will be generated and "M0 C001" will appear on the display to indicate that Station A is paging Station B.

41