

General Information

This program manual is for use with the HX242. The manual provides an overview of each function and the necessary function settings for each Program Mode.

There are 3 Program Modes.

1. Function Program Mode

The necessary settings for each function and the settings needed for using the scrambler board (CVS240) are carried out in this mode.

2. Channel Data Program Mode

Settings necessary for operating the radio such as the continuous transmission time, transmission frequency, and receiving frequency settings as well as the CTCSS tone settings and channel designations for trunking are carried out in this mode.

3. DTMF User Program Mode

The settings for the necessary headings when the DTMF board option is used are carried out in this mode. Refer to HX242 owner's manual.

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Control

Front panel

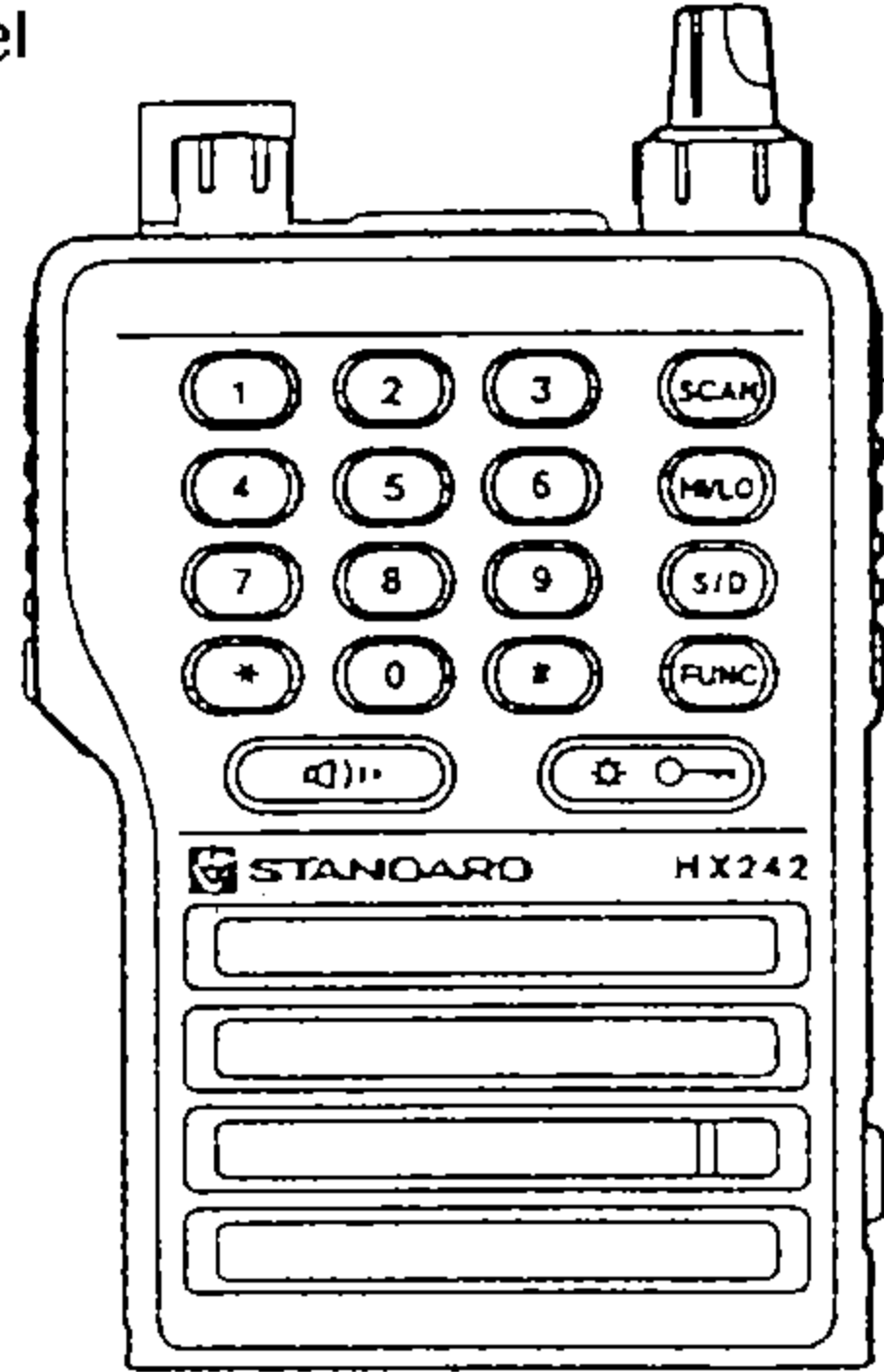


Figure 1

Internal Dip Switch

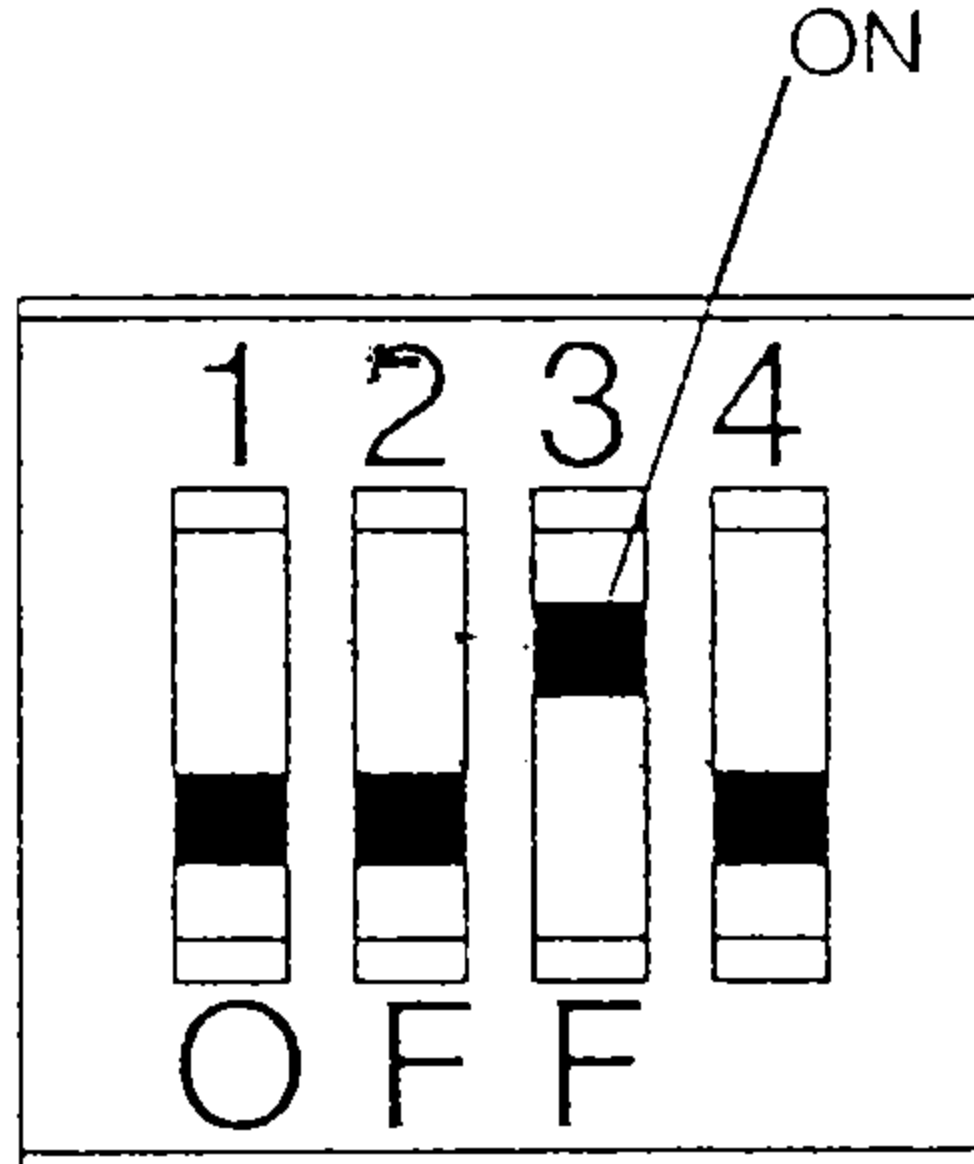


Figure 2

Mode Outline

MODE OPERATION TABLE

Table 1

MODE	OPERATION	INTERNAL DIP SWITCH				FUNCTION
		SW 1	SW 2	SW 3	SW 4	
NORMAL Operation Mode	Power ON	---	---	---	---	
HX240 Clone Master	<input type="button" value="FUNC"/> + <input type="button" value="LAMP/KEY.L"/> + Power ON	---	---	---	ON	
HX242 Clone Master		---	---	---	OFF	
HX260 Clone Slave	<input type="button" value="FUNC"/> + <input type="button" value="MONI"/> + Power ON	---	---	---	ON	
HX242 Clone Slave		---	---	---	OFF	
Channel Data Program Mode	<input type="button" value="FUNC"/> + <input type="button" value="SCAN"/> + Power ON	---	---	ON	---	Time Out Timer Channel Step Freq TX/RX CTCSS TX/RX Trunking CHANNEL ON/OFF
		---	ON	---	---	
Function Program Mode	<input type="button" value="FUNC"/> + <input type="button" value="HI/LO"/> + Power ON	---	ON	---	---	Busy Lock Out CTCSS Busy Lock Out Scan Resume Scan Stop Batt Save ON/OFF SCRAMBLER ON/OFF DTMF TX INHIBIT SET Service Disable CODE SET
		ON	---	---	---	
Scrambler Program Mode Only enabled when CVS board is used	<input type="button" value="S/D"/> + Power ON	---	---	---	---	
DTMF Program Mode Only enabled when DTMF board is used	<input type="button" value="*"/> + Power ON	---	---	---	---	Dial Memory 1-5 ANI memory DTMF FORMAT Select Own Station Status Memory ANI Select First Tone Delay Dial Speed BEEP Select
DTMF Mode Only enabled when DTMF board is used	<input type="button" value="0"/> + Power ON	---	---	---	---	ON/OFF
Answer Back Mode Only enabled when DTMF board is used	In PAGING MODE enter "2" after <input type="button" value="FUNC"/> is pressed	---	---	---	---	ON/OFF
Answer Back Code Set Mode Only enabled when DTMF board is used	In PAGING MODE enter "1" after <input type="button" value="FUNC"/> is pressed	---	---	---	---	

※ When power is ON, operation in all cases other than the ones listed above is in the Normal Operation Mode.

※ The "—" mark means that the switch position can be set ON or OFF.

1. Normal Operation Mode

This is the operation mode for normal radio use.

2. Cloning Mode

This mode is used when data settings are received from or transmitted to another transceiver.

(1) HX240 Clone Master

Data is transmitted using the format structure employed by the HX240.

* Only common data is output.

(2) HX242 Clone Master

Data is transmitted using the HX242 data structure.

(3) HX240 Clone Slave

Data is received using the format structure employed by the HX240.

* Only common data is received.

(4) HX242 Clone Slave

Data is received using the HX242 data structure.

3. Channel Data Program Mode

The following items must be set.

(1) Time Out Timer

This sets the continuous transmission time. A setting can be made from 0.5 minute to a maximum of 8.5 minutes in increments of 0.5 minute, or this mode can be turned OFF.

(2) Channel Step

This sets the value of the frequency step between channels. The following settings are possible; 5 kHz, 10 kHz, 12.5 kHz, 25 kHz, and 50 kHz.

(3) Frequency TX/RX

Range of frequency settings

VHF: 130 MHz - 180 MHz, UHF: 300 MHz - 520 MHz

However, the frequencies which are possible to set are as shown.

VHF: F1...138 MHz - 150 MHz

F3...146 MHz - 170 MHz

UHF: F1...400 MHz - 420 MHz

F3...450 MHz - 470 MHz

F8...345 MHz - 370 MHz

This sets the transmission and reception frequencies. The possible frequency settings are values that can be divided by the frequency step set in the previous heading.

(4) CTCSS TX/RX

This sets the CTCSS frequency when signals are transmitted and received.

(5) Trunking Channel ON

This sets whether the trunking channel or the normal channel is used.



Function Program Mode

(1) Busy Lock Out

This sets whether transmission activity is possible or not when the unit is busy.

*CTCSS Busy Lock Out

This sets whether transmission is not possible when tones match or whether transmission is only possible when tones match.

(2) Scan Resume

When scan activity is cut by a BUSY STOP signal, this sets whether the time setting before scan activity resumes (2.5 sec.) is enabled or not.

(3) Scan Stop

During scanning if the PTT switch is pressed and scanning stops, this sets whether scanning will remain stopped as long as the Scan switch is not pressed or whether scanning will automatically resume 2.5 seconds after the PTT switch is pressed.

(4) Batt Save

This sets whether the battery save function is enabled or not. When this function is set to ON and the unit is in the waiting status, the power voltage can be reduced based on intermittent reception thereby making it possible to extend the lifetime of the battery.

(5) Scrambler ON/OFF

This setting enables or disables use of the voice scrambler board.

(6) DTMF TX Inhibit Set

This sets whether the DTMF TX inhibit mode is enabled or not.

Refer to HX242 owner's manual.

(7) Service Disable Code Set

This sets the Service Disable code. While the code set here is being received, the transceiver cannot be used. If the transceiver is stolen this code can be used to render the unit temporarily inoperable from another transceiver.

5. Scrambler Program Mode

This mode is used for setting the voice scrambler code.

(This mode is only enabled when the scrambler board is used.)

Only those stations with the same set code are able to receive normal reception. A code from 000 to 127 can be set.

6. DTMF Program Mode

This mode is used to make the DTMF function settings.

(This mode is only enabled when the DTMF board is used.)

(1) Dial Memory 1 - 5

These are memory locations for the 5 Encode data units used with DTMF encoding. A maximum of 21 digits can be set in each memory location.

(2) ANI Memory

This sets the code that is output to synchronize the ON/OFF operation of the PTT switch

- The output timing is set in ANI Select.

- ANI code up to a maximum of 21 digits can be stored in memory and the following characters/symbols can be used; 0 -9, *, #, and A - D.

(3) DTMF Format Select

This sets the HX190 format or the HX240 format.

(4) Own Station

This sets the 3 digits station code.

(5) Status Memory

This sets the 3 digits status code. In the case of the HX190 format, this sets the group code.

(6) ANI Select

This sets the output timing of the ANI code.

*One of the following 4 types of output timing sequences can be selected.

① OFF (ANI code is not output)

② ANI code is output when PTT SW is ON.

③ ANI code is output when PTT SW is OFF.

④ ANI code is output when PTT SW is ON or OFF.

(7) First tone delay time

Once transmission status is ready, this sets the amount of time until output of the DTMF code begins. The time setting can be selected from the following:

① 250 mSec

② 350 mSec

③ 750 mSec

(8) Dial Speed

This sets the DTMF tone code output time when the DTMF code is automatically output. The time setting can be selected from among the following 4 types.

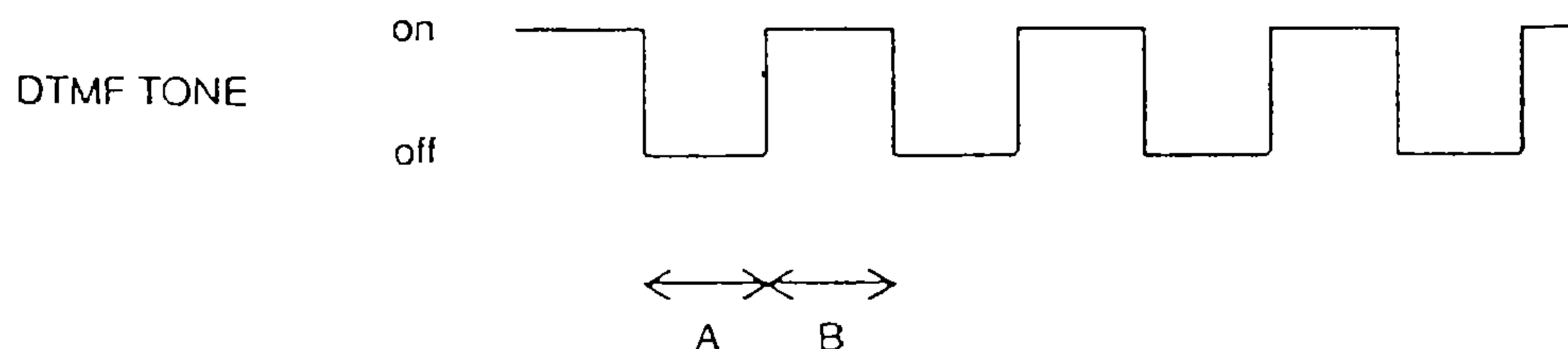
① A...30 mSec B...30 mSec

② A...50 mSec B...50 mSec

③ A...80 mSec B...80 mSec

④ A...160 mSec B...160 mSec

Figure 3



(9) Beep Select

This sets whether or not a beeping sound is activated when a call is received

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7. DTMF Mode

In this mode it is possible to use the DTMF tone for individual calls or group calls.

(This is only enabled when the DTMF board is used)

8. Answer-Back Mode

In this mode when a call is received from another station, an answer-back code is automatically sent.
 (This is only enabled when the DTMF board is used)

(1) Answer-Back Mode Outline

When a call is received from another station a 3 digits answer-back code automatically returns to the sending station.

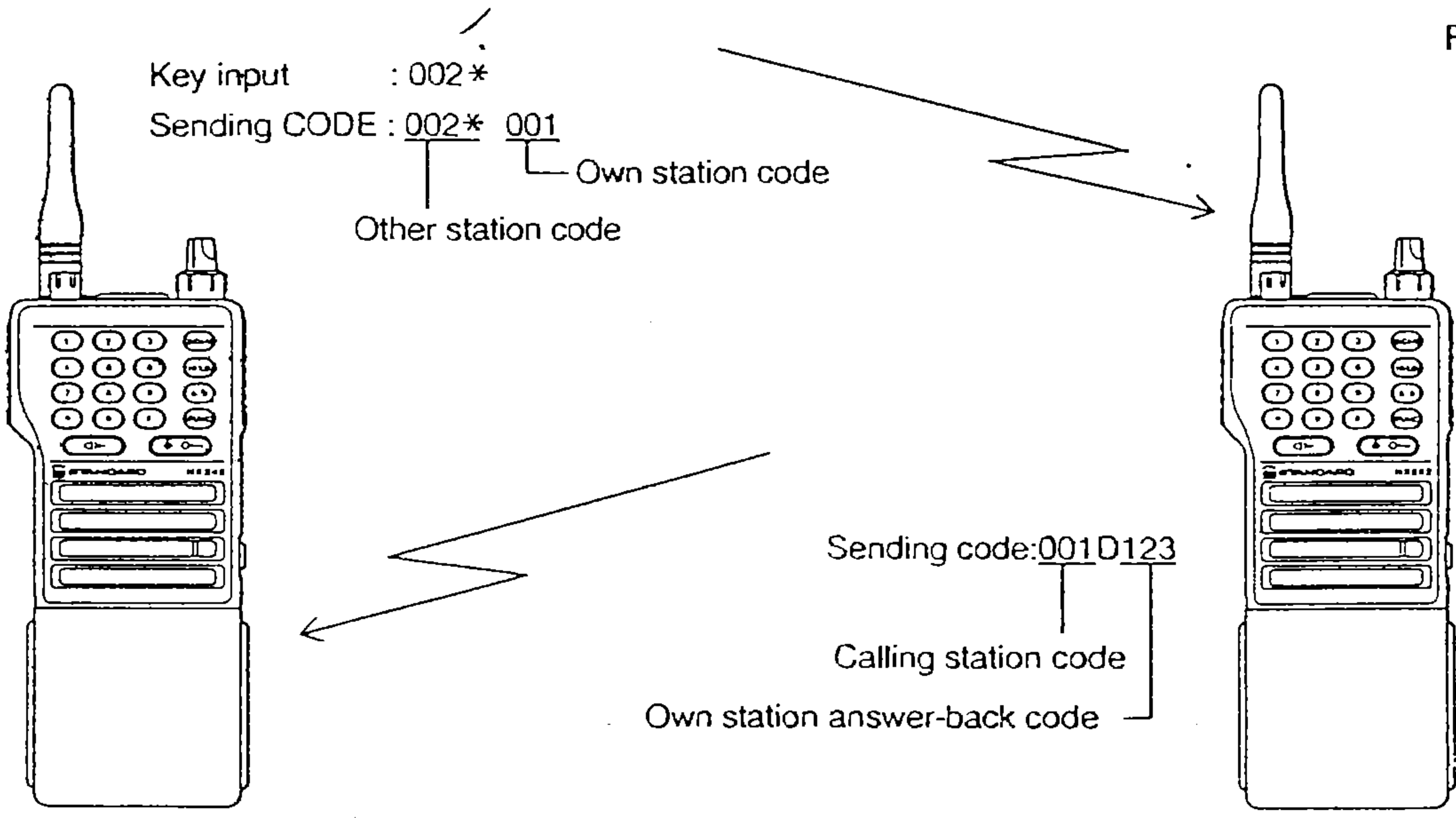
- * It is necessary to use the CTD1600 Board (DTMF Encoder/Decoder) with this mode.
- * While pressing the [0] key turn ON the power, then enter the [2] key after the [FUNC] key has been pressed in the paging mode in order to activate this mode.

(Refer to the MODE OPERATION TABLE)

- * If the other station is also in the answer-back mode then the following actions can take place.
 - ① Only when the calling station uses an Individual code and Own station code is an acknowledge code returned from the receiving station.
 - ② When the acknowledge code from the calling station arrives at the receiving station, a beep is sounded and the answer-back code from the receiving station is displayed.
 - ③ If the answer-back code is not set by the receiving station, only a beep is sounded

(ex): Calling station A:CODE 001
 Receiving station B:CODE 002

Answer-back code 123



After the answer-back code is received, the unit beeps and displays the status of the other station.

After receiving the call, the unit sends the answer back code.

Answer-Back mode works in the paging mode.
 The answer-back code can be programmed in the paging mode.

(2) Examples of the displays during operation in the answer-back mode.

① Display in the answer-back mode

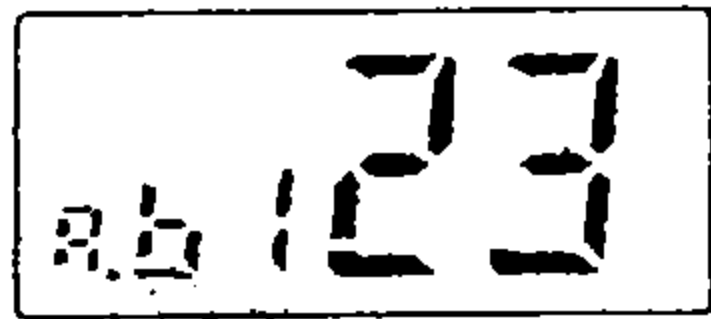


Dot lights up

② Display of the receiving station



③ Display of the calling station after the status code is received



I. Answer-Back Code Set Mode

This mode sets the code that is sent when the station is called, in the answer-back mode. This mode is entered from the paging mode by pressing the **FUNC** key followed by the **1** key. After inputting the code, press the **FUNC** key followed by the **1** key again in order to complete the setting process.

Refer to HX242 owner's manual.

0. Call-Back Function

If you are busy or away from the transceiver when a paging code is received and DTMF mute has been automatically activated, this function allows you to return the call by pressing the PTT switch. Before using this function make sure that the calling station uses an Individual code and Own code. However, this function is disabled if the ANI function is set. To cancel the call-back function press any key other than the PTT switch.

Refer to HX242 owner's manual.




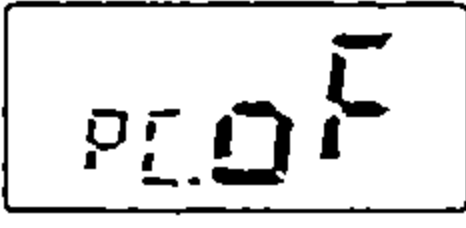
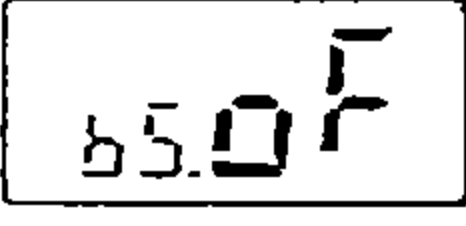

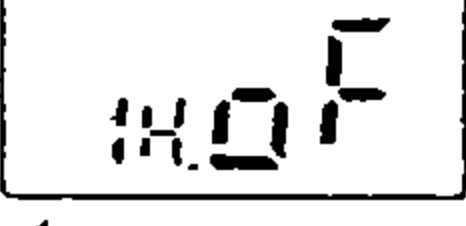
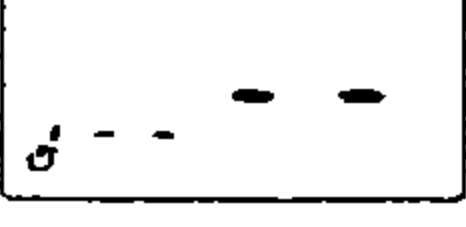
Function Program Mode

Function Program Mode

The contents of this mode are set by your dealer. The settings associated with the limitations of transmission activity and the use of options as well as those settings related to scan activity are carried out in this mode.

Settings in the Function Program Mode

Table 2

PROGRAM Name	Display	Setting	Initially
1. BUSY LOCK OUT		ON : Busy lock out ON OF : Busy lock out OFF (Refer to Page 14)	OF
2. TONE BUSY LOCK OUT		ON : Tone busy lock out ON OF : Tone busy lock out OFF (Refer to Page 14)	OF
3. SCAN RESUME TIME		ON : After scanning stops it restarts 2.5sec. from busy OFF OF : Scanning starts right after busy OFF	ON
4. PTT SCAN CLEAR		ON : Scan stops when PTT is ON OF : Scan does not stop when PTT is ON	OF
5. BATTERY SAVE		ON : Battery save carried out OF : Battery save not carried out ※Set to OF when in the DTMF paging mode or trunking mode	OF
6. VOICE SCRAMBLER		ON : Voice scrambler in use OF : Voice scrambler not in use	OF
7. DTMF TX INHIBIT		DTMF Inhibit mode OF : Not used ON : Used	OF
8. SERVICE DISABLE CODE		0 to 9. After a 4-digit password and a 6-digit code is set, if this 10-digit DTMF code is received the disable condition is activated. If this setting is not completed, the disable mode is not activated	No setting

3. Booting Up the Function Program Mode

(1) Set the DIP SW2 to ON and press the **FUNC** key and the **HI/LO** keys at the same time, turn the power on.

(2) The LCD displays "— — —", follow the procedure below.

(3) Next carry out the settings in the procedure below.

Procedure

1. Busy Lock Out Setting

This should be set to determine whether transmission activity is possible or not when the unit is busy.

1) Press the **LAMP/KEY.L** key to call the Busy Lock Out program address.

2) "bL.OF" flashes on the LCD display (Initially)

3) Turn the channel selector to change the setting to either ON or OFF.

4) After ON or OFF has been set, press the **MONI** key to register it in memory.

5) Press the **LAMP/KEY.L** key, go to the next item.

2. CTCSS Busy Lock Out Setting

This should be set to determine whether transmission activity is not possible when tones match or whether transmission activity is only possible when tones match.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

3. Scan Resume Time Setting

When scan activity is cut by a BUSY STOP signal, this sets whether the time setting before scan activity resumes (2.5 sec) is enabled or not.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

4. PTT Scan Clear Setting

This should be set to determine whether scanning remains stopped as long as the scan switch is not pressed or whether scanning automatically resumes the scan after the PTT switch is pressed, if the PTT switch is pressed during scanning and scan stops.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

5. Battery Save Setting

This should be set to determine whether the Battery Save function is enabled or not.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

6. Voice Scrambler Setting

This should be set to determine whether use of the Scrambler board is enabled or not.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

7. DTMF TX Inhibit Mode Setting

This should be set to determine whether the DTMF TX Inhibit mode is used or not.

※The method for setting is same as in procedure 1. Busy Lock Out Setting.

Service Disable Code Setting

This should be set to determine the code for the Service Disable function. The Service Disable function is enabled at the same time this code is set. In the case your transceiver is stolen this function allows you to render the transceiver inoperable.

Caution: It is important to exercise care in managing the password (4-digits) and disable code (6-digits) that are set here.

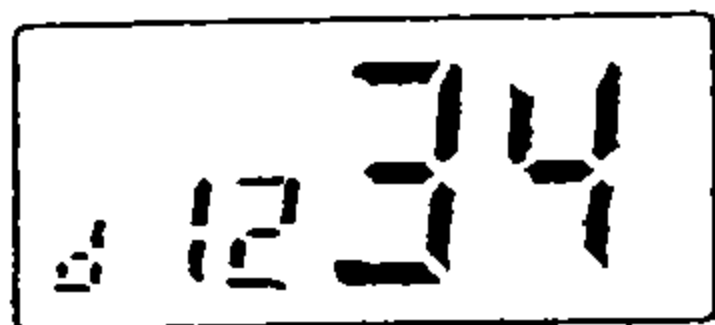
a. Changing from the not set to the set status

1) Press the **LAMP/KEY.L** key to call the Service Disable Code heading.

2) "d- - -" is displayed on the LCD screen (Initially).

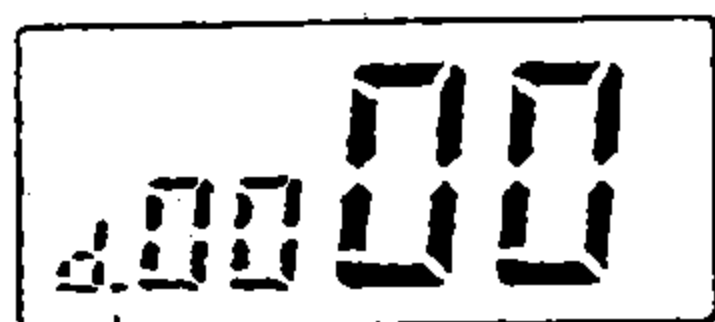
(Advise: If you press the **LAMP/KEY.L** key here the screen moves to the first heading (Busy Lock Out setting).)

3) Use the Key pad to input the 4-digit password.



(Example of "1234" setting)

4) Next, press the **MONI** key to register it in memory.

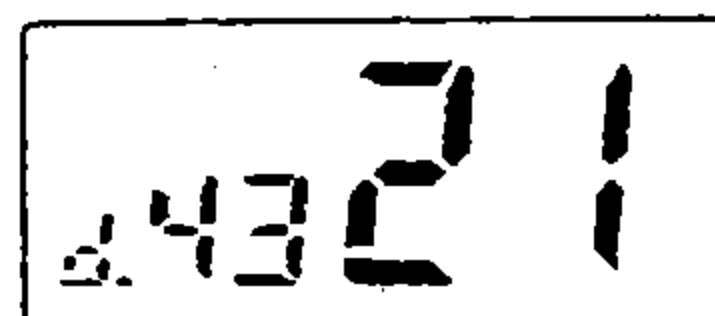


(The display changes to the disable code from the pass word.)
"00 00" is displayed in initial state.

The dot display indicates that the password has been set.

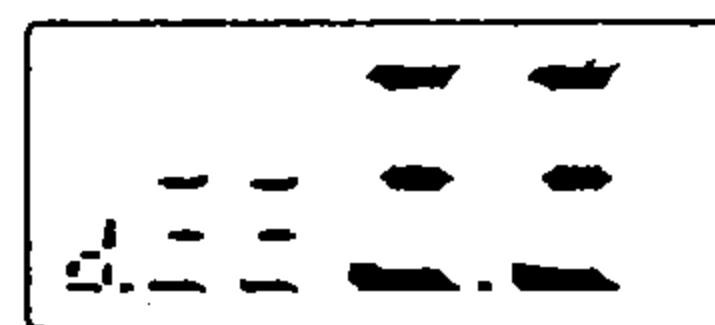
Note: If the **SCAN** key is pressed between step 3) and 4) the display moves back to step 2.

5) Input a 6-digit disable code.



(Example of 654321 input)

6) Next, press the **MONI** key to register it in memory.



(The memorized disable code disappears, and the display changes " ≡ ≡ ≡ " this indicates the setting is complete.)

The above procedure sets the disable mode status.

Note: If the **SCAN** key is pressed between step 5 and 6 the display moves back to step 4 the completed status.

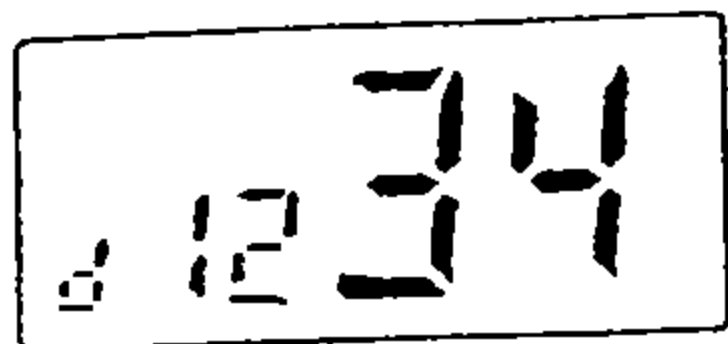
b. Changing from the set to not set status

1) Press the **LAMP/KEY L** key to call the Service Disable code address.

2) "d.≡≡≡≡" is displayed.

(Advise: Pressing the **LAMP/KEY.L** key here moves the screen to the first heading (Busy Loc

3) Use the Key pad to input the 4-digit password.

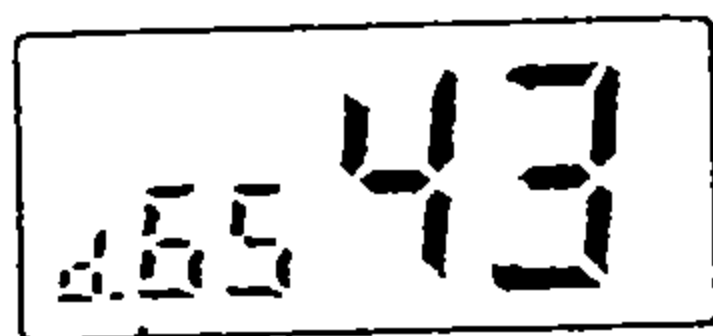


(Example of "1234" setting)

Note: If the **SCAN** key is pressed here the screen returns to step 2.

4) Next, press the **MONI** key to recall memory.

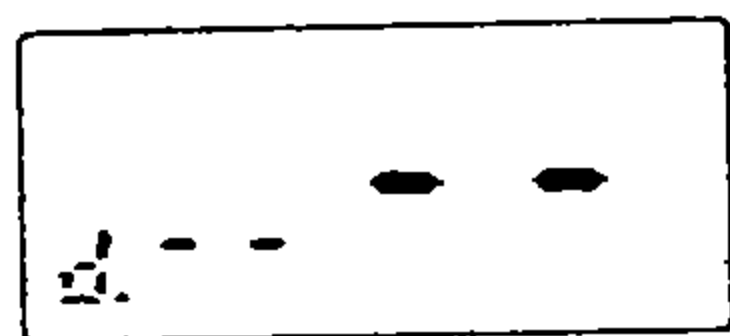
If the password matches here then the previously input Disable code is displayed



(First 4 digits of the disable code)

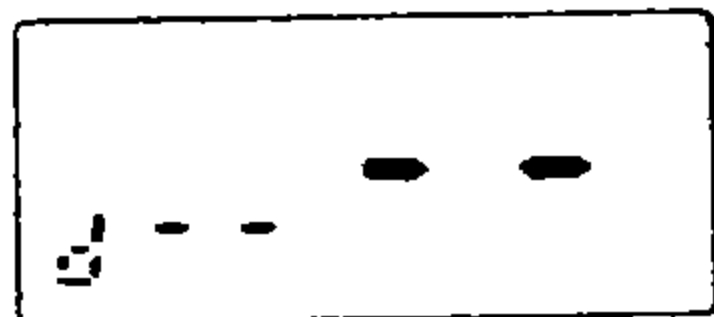
If it does not match the display returns to step 1 and the password input status.

5) Press the **SCAN** key to clear the disable code.



(Disable code can be cleared)

6) Press the **SCAN** key again to clear the password.



(Password is cleared)

Note: When changing the password or Disable code, return to the Disable "not set" status before re-arming.

Program Completion

(1) When the program is completed turn the power switch off.

(2) Set the dip switch 3 to ON, and set the other dip switches to OFF.

(3) When the power is turned back on the transceiver is ready for operation.

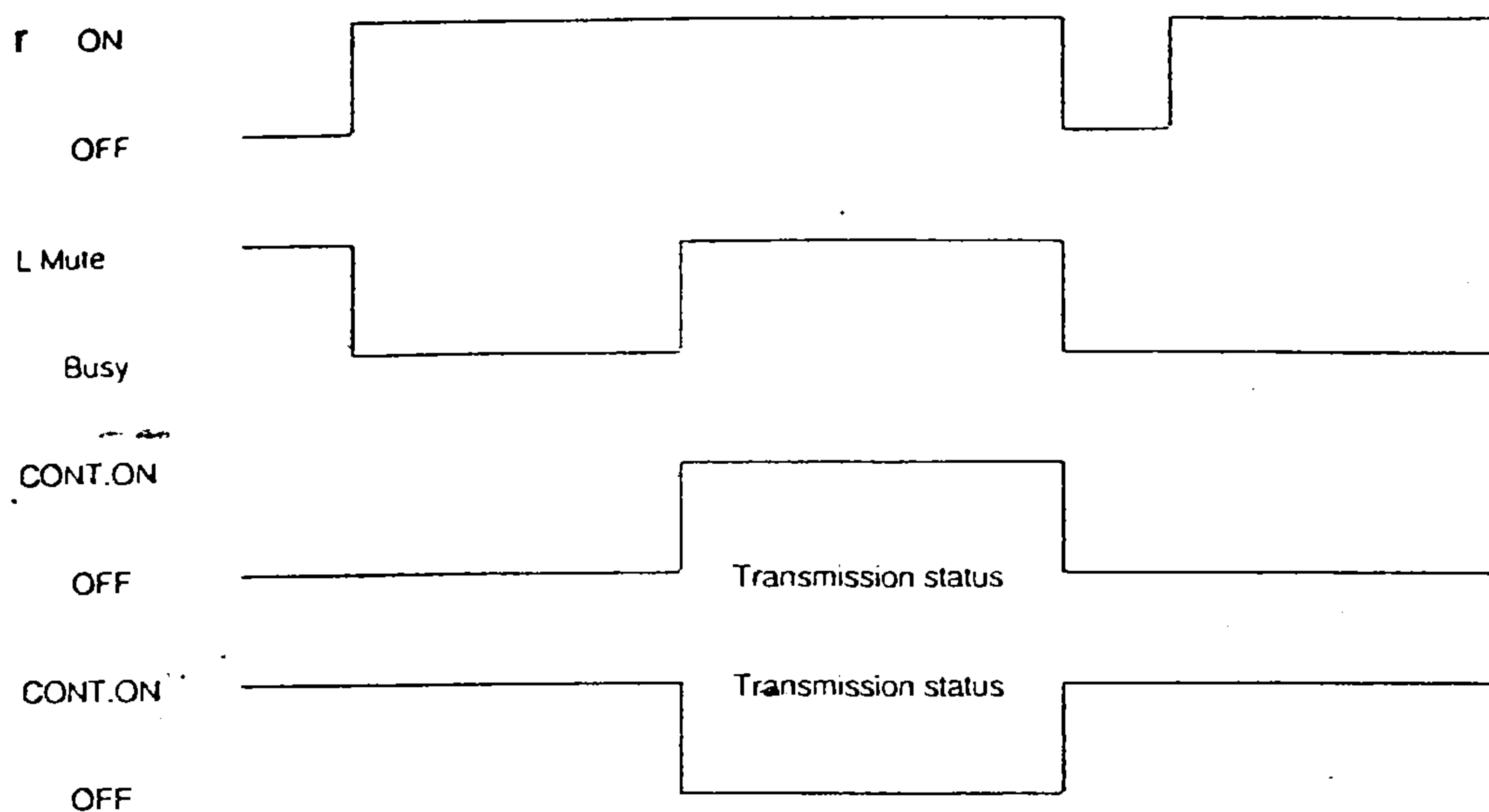
Busy Lock Out (Tone Busy Lock Out)

When the SQL signal is busy, transmission is halted even if the PTT switch is ON.

When transmission is halted a warning beep is sounded.

When the busy signal disappears during Busy Lock Out, TX begins immediately.

Figure 6



The following table provides the combined settings for busy lock out and tone Busy Lock Out.

Table 3

SETTING	BUSY LOCK OUT		OFF	ON	OFF	ON
	CTCSS BUSY LOCK OUT		OFF	OFF	ON	ON
RECEIVING STATUS	NO TONE	NOT BUSY	○	○	○	○
		BUSY	○	×	○	×
	TONE NOT MATCHED	NOT BUSY	○	○	○	○
		BUSY	○	×	×	○
	TONE MATCHED	NOT BUSY	○	○	○	○
		BUSY	○	×	○	×

○ . . . Transmission possible

× . . . Transmission not possible

Channel Data Program Mode

Channel Data Program Mode

frequencies and other important information that must be employed are set in this mode.

Procedure for Setting the Program Mode

1 Contents of Program Mode Setting

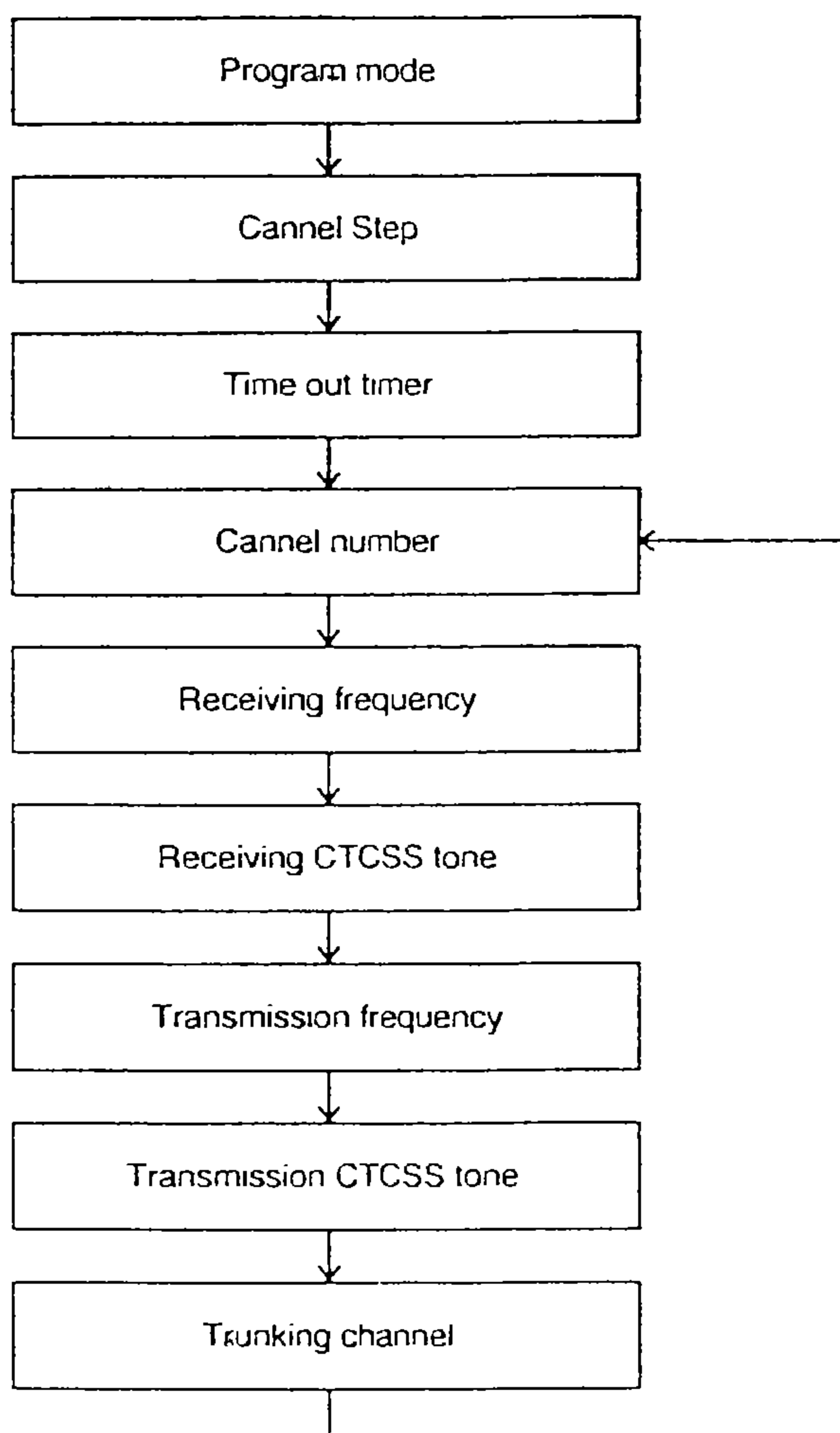
Settings are applicable to all channels

1. Channel step
2. Time Out Timer

Individual channel settings

1. Channel display
2. Receiving frequency
3. Receiving CTCSS tone frequency
4. Transmission frequency
5. Transmission CTCSS tone frequency
6. Trunking channel

2 Program Steps



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Figure 7.

Program steps proceed in accordance to the order shown in the flowchart figure 7.

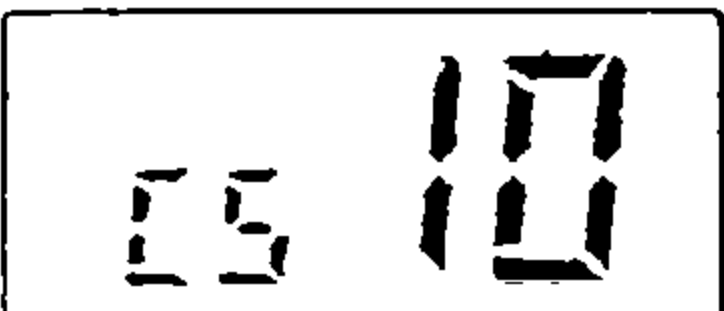
LAMP/KEY.L	This key is used to scroll through the setting steps.
MONI	This key is used to store the input contents in memory.
Channel Selector	This key is used for inputting or for changing the input contents.
SCAN	This key is used to erase the contents of the transmission signal or receiving frequency.
FUNC	This key is used to change the step frequency input based on the channel selector when the receiving or transmission frequency is being input. <ul style="list-style-type: none"> • FUNC OFF When the channel steps are being set, the frequency moves up and down in increments set by the step frequency that has been input using the channel selector. • FUNC ON Changes the input frequency (set using the channel selector) moving up or down in increments of 1 MHz.

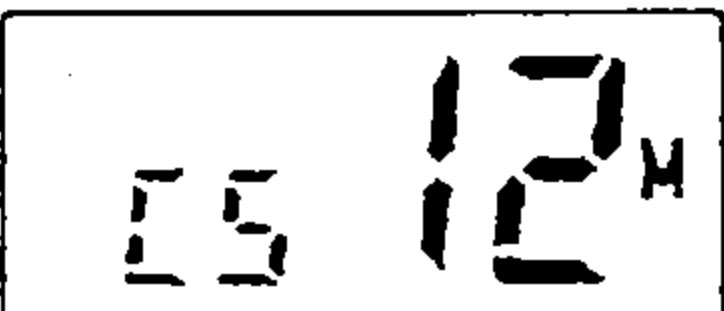
Booting Up the Channel Program Mode

- 1) Set the internal dip switch 3 on the PCB to ON.
- 2) While pressing the **FUNC** key and the **SCAN** keys, turn the power on.
- 3) After the LCD display is lit release the keys and "--" is displayed, that the Program Mode has been booted.

Procedure for Setting the Channel Step

- 1) Press the **LAMP/KEY.L** key to enter the channel step input mode.

In the case of VHF  "CS 10M" is displayed.

In the case of UHF  "CS 12M" is displayed.

If something has been previously entered in memory, then that channel step is displayed.

- 2) The channel step is selected from among 5, 10, 12.5, 25, and 50 kHz by turning the channel selector.

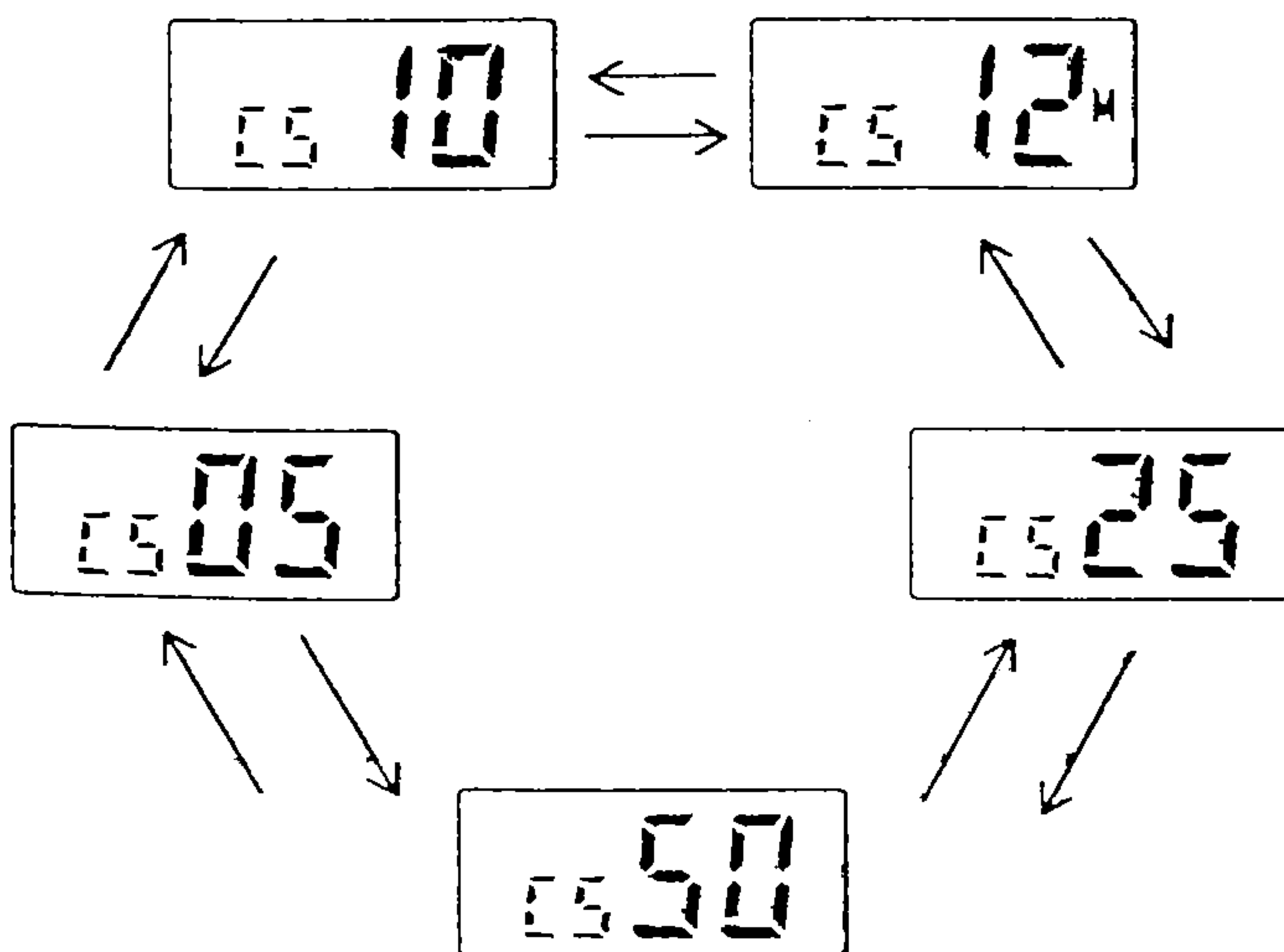


Figure 8

- 3) After setting the channel step, press the **MONI** key to enter the memory status. The "S" on the display lights to indicate that the item has been registered in memory.