ICOM

INSTRUCTION MANUAL

VHF FM TRANSCEIVER

IC-P2CT

UHF FM TRANSCEIVER

IC-P4CT

Icom Inc.

FOREWORD

Thank you for purchasing a "PT" series transceiver. This state-of-the-art handheld is compact and provides ease of use with multi-operational capabilities.

IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL – This instruction manual contains important safety and operating instructions for the **IC-P4CT/IC-P2CT.**

NOTE: The IC-P4CT-1's display is used in illustration examples. The only difference from the IC-P2CT and IC-P4CT-2 is the frequency.

CAUTIONS

NEVER connect the transceiver to an AC outlet or to a power source of more than 16 V DC. This will damage the transceiver.

NEVER connect the transceiver to a power source using reverse polarity. This will damage the transceiver.

NEVER allow children to touch the transceiver.

AVOID using or placing the transceiver in areas with temperatures below −10℃ or above +60℃.

AVOID placing the transceiver in direct sunlight.

AVOID the use of strong solvents such as benzine or alcohol when cleaning, as they may damage the transceiver surfaces.

OPERATING NOTES

BE CAREFUL! The rear panel will become hot when transmitting for long periods at high power.

When possible, transmit at low output to conserve power.

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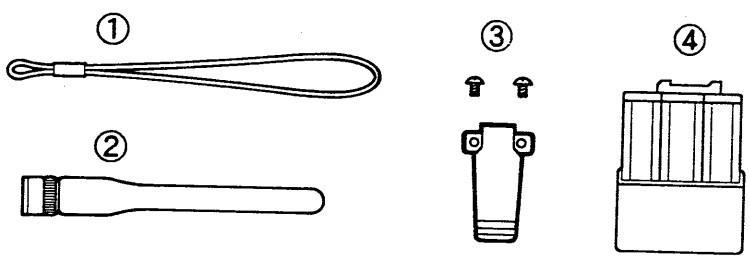
UNPACKING



Accessories included with the transceiver: **Qty.**

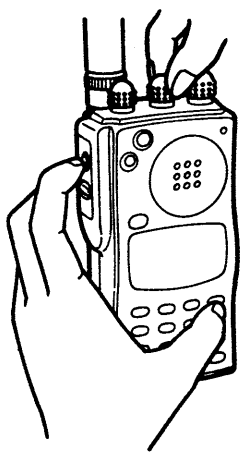
- ① Handstrap 1
- ② Antenna 1
- ③ Belt clip and screws ..... 1 set
- ④ Battery case (BP-110) 1

1 PRE-OPERATION

Resetting the CPU

Reset the transceiver before operating for the first time, or when the function display shows erroneous information.

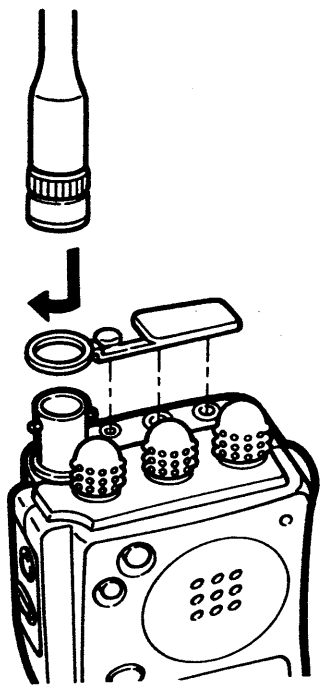
While pushing the [FUNC] and [Ⓐ CLR] keys, rotate [PWR/VOL] to turn power ON.



CAUTION: Resetting the CPU will clear and initialize all memory channel contents, SET mode settings, DTMF memory contents and clock and timer settings.

Antenna and rainproof cap

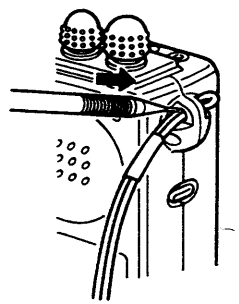
Insert the supplied antenna into the antenna connector and rotate the antenna as shown in the diagram below.



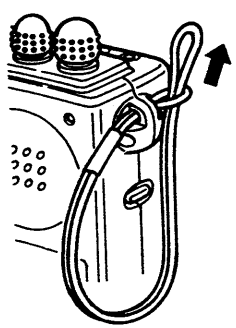
Handstrap

The handstrap is convenient for carrying the transceiver. Attach the handstrap as shown in the diagrams below:

1. Push the short end of the handstrap through the loop on the transceiver using a pointed instrument.



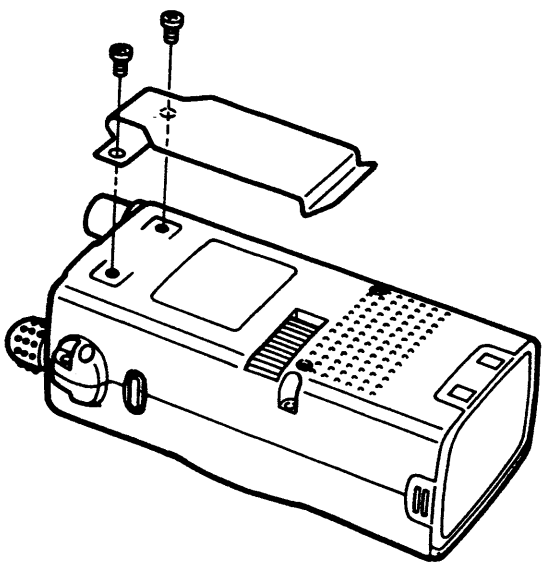
2. Put the long end of the handstrap through the short end's loop, then, pull it all the way through and tighten.



Belt clip

The belt clip allows you to attach the transceiver to your belt.

Remove the plastic screws to attach the belt clip.

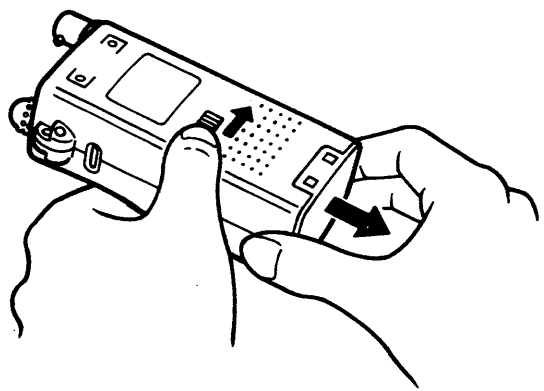


To use an optional MB-22 ALLIGATOR CLIP with the transceiver, use the screws supplied with the transceiver. **NEVER** use the screws supplied with the alligator clip.

Battery case/pack

Slide the battery pack release button on the rear panel inward, then pull the battery case downwards.

To insert the battery case, slide the case into the bottom of the transceiver until it clicks into place.



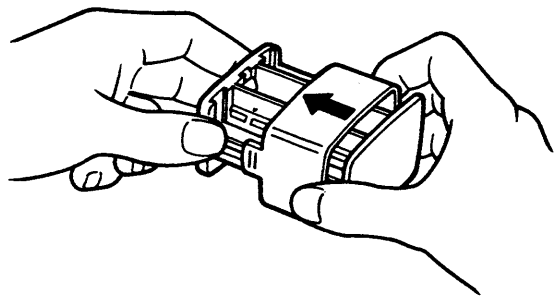
- **Be careful!** The transceiver has a battery stopper, therefore exact insertion is necessary.
- Minimal current drain to the lithium backup battery and CPU will result in exhaustion of an attached battery pack or case during long periods of storage.

Battery installation

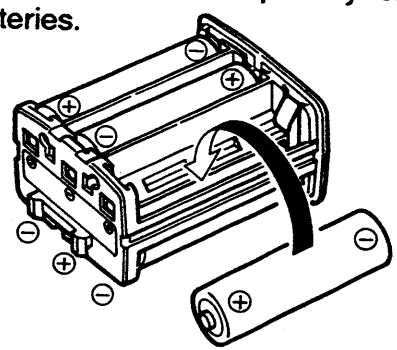
Non-rechargeable dry cell batteries can be installed in the transceiver.

To install the batteries, remove the battery case cover as shown in the diagram below:

1. Slide the battery case cover lengthwise to remove it.



2. Install six AA (R6) type batteries. Be sure to observe the polarity of the batteries.

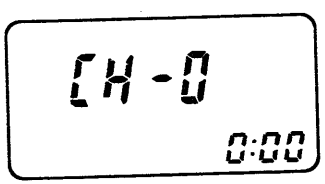


2 MODE CONSTRUCTION

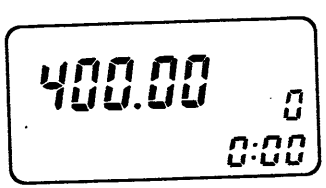
2-1 Mode types

The transceiver has 6 different modes and 1 call channel for versatile, multi-function operations.

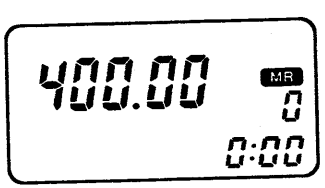
CHANNEL INDICATION MODE (p. 28)
Used for operating a pre-programmed memory channel or call channel.



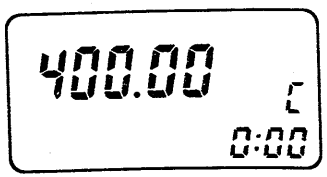
VFO MODE (frequency setting) (p. 11)
Used for frequency setting and normal operations over the entire band.



MEMORY MODE (p. 17)
Used for operating the transceiver using memory channel contents. 100 memory channels are available for programming.

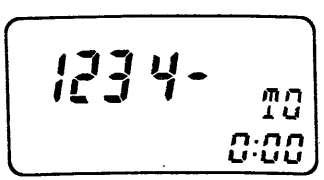


CALL CHANNEL (p. 20)
Used for operating the transceiver on a programmed call channel.

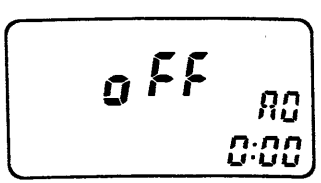


SET MODE (various pages)
Used for programming infrequently changed settings.

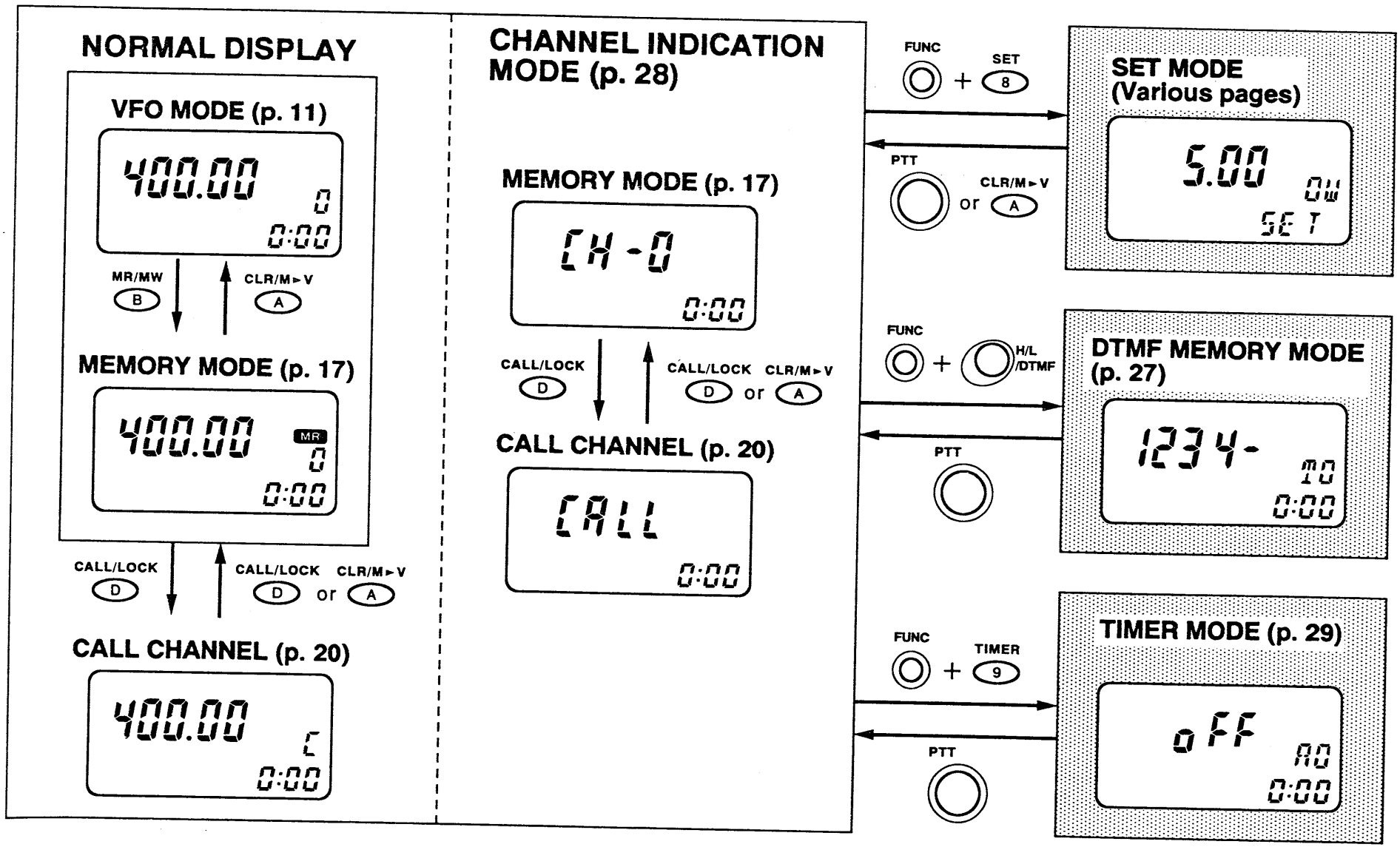
DTMF MEMORY MODE (p. 27)
Used for programming DTMF codes. 16 DTMF memory channels with up to 15 digits each are available.



TIMER MODE (p. 29)
Used for setting the power-on timer, power-off timer and auto power-off function.

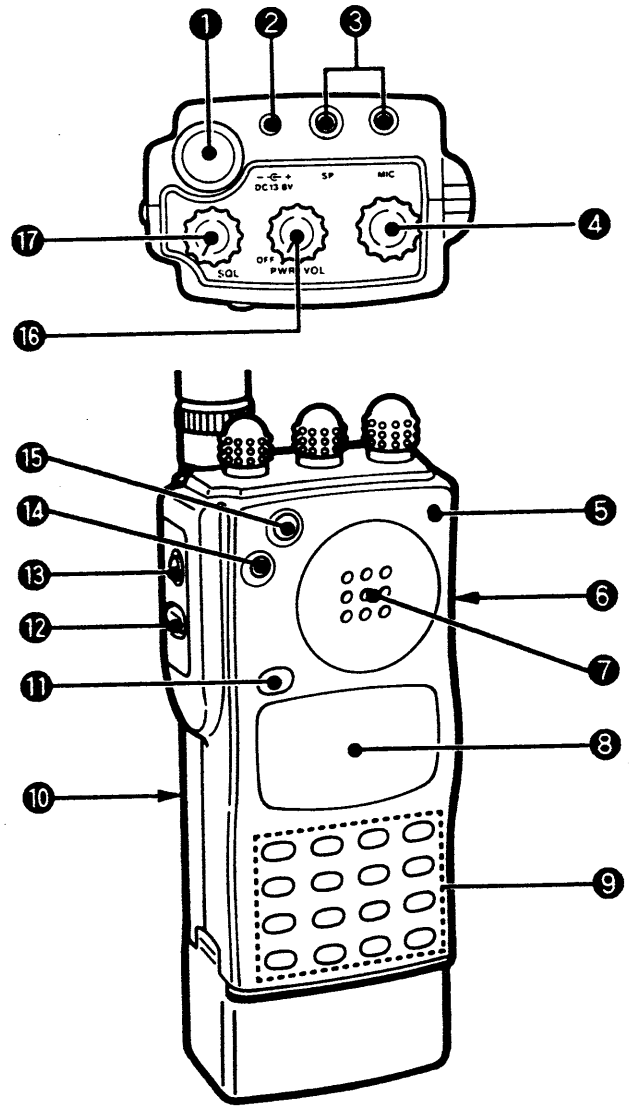


2-2 Mode arrangement chart



3 PANEL DESCRIPTION

3-1 Switches and controls



❶ **ANTENNA CONNECTOR** (p. 1)
Connects the supplied flexible antenna.

❷ **EXTERNAL DC POWER JACK [DC13.8V]**
Connects an optional wall charger for charging an optional battery pack.

CAUTION when using dry cell batteries!
Operation with an external DC power source simultaneously charges batteries inside the battery case. This may cause battery leakage and damage the transceiver.

❸ **EXTERNAL SPEAKER AND MICROPHONE JACKS [SP/MIC]**
Connects an optional speaker-microphone or headset, if desired. The internal speaker and microphone will not function when either is connected.

❹ **MAIN DIAL**
Sets operating frequency, memory channel and SET mode contents.

❺ **TRANSMIT/RECEIVE INDICATOR**
Lights up in green when the squelch opens; lights up in red while transmitting.

❻ LIGHT SWITCH [LIGHT]
Turns the display and keyboard lighting ON and OFF.

[FUNC] + [LIGHT] turns the display and keyboard lighting ON continuously or OFF.

❼ SPEAKER/MICROPHONE

❽ FUNCTION DISPLAY (pgs. 9, 10)
Indicates the operating condition.

❾ KEYBOARD (pgs. 7, 8)
Numeral and other function keys for activating functions and tuning.

❿ BATTERY PACK RELEASE BUTTON (p. 2)
Opens the latch for battery pack removal when pushed inward.

⓫ AI KEY [AI]
Push to activate the function indicated by the AI function indicator. (p. 44)

Enters AI selection mode when pushed and held. (p. 44)

This switch does not function when the channel indication mode is selected. (p. 28)

⓬ PTT SWITCH [PTT] (p. 14)
Push and hold to transmit; release to receive.

⓭ FUNCTION SWITCH [FUNC]
While pushing [FUNC], all switches are set for secondary function use. (p. 7, 8)

- "Push [FUNC] + [LIGHT]" means "while pushing the [FUNC] switch, push the [LIGHT] switch."
- In VFO mode, the dial select function is activated. (p. 13)

⓮ MONITOR SWITCH [MONI/DSEL]
Monitors an operating frequency. (p. 14)

[FUNC] + [MONI/DSEL] changes the dial select step. (p. 13) The dial select does not function in the channel indication mode. (p. 28)

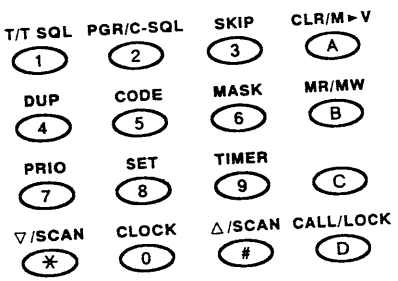
⓯ HIGH/LOW SWITCH [H/L/DTMF]
Selects high or low output power. (p. 14)

[FUNC] + [H/L/DTMF] selects DTMF memory mode. (p. 27)

⓰ VOLUME CONTROL [PWR/VOL] (p. 14)
Turns power ON and OFF and adjusts the audio level.

⓱ SQUELCH CONTROL [SQL] (p. 14)
Varies the squelch threshold point for noise mute.

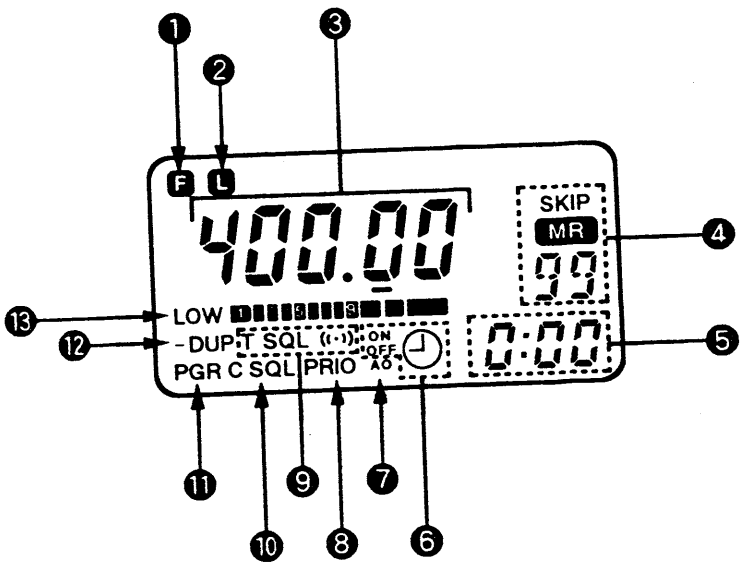
3-2 Keyboard

KEY	FUNCTION	SECONDARY FUNCTION (While pushing [FUNC])
T/T SQL (1)		Turns ON the following optional functions in this sequence: subaudible tone encoder → pocket beep → tone squelch → non-tone operation. (pgs. 16, 40, 41)
PGR/C-SQL (2)		Turns ON the following optional functions in this sequence: pager → code squelch → non-selective calling operation. (pgs. 37~39)
SKIP (3)		Sets the selected memory channel as a skip memory channel in MEMORY mode. (p. 24)
DUP (4)		Selects the duplex direction in this sequence: – duplex → + duplex → simplex. (p. 16)
CODE (5)		Programs the code channel for optional pager and code squelch. (p. 36)
MASK (6)	• When selecting VFO mode: Enters the digit for the operating frequency.* (p. 12)	Hides and displays the selected memory channel in MEMORY mode.* Memory channel 0 cannot be hidden. (p. 19)
PRIO (7)		Starts the priority watch.* (p. 26)
SET (8)	• When selecting MEMORY mode: Enters the first digit only into the memory channel.* (p. 18)	• When selecting VFO/MEMORY mode or the call channel: Enters SET mode. (Various pages) • When selecting DTMF MEMORY mode: Programs DTMF code. (p. 27)
TIMER (9)		Enters TIMER mode. (p. 29)
CLOCK (0)	• When transmitting: Transmits DTMF digits. (p. 16)	• When the AI function indicator shows a function: Calls up the clock display. (p. 30) • When the AI function indicator shows a time: Programs the time. (p. 30)

* The function marked "*" does not function when the channel indication mode is selected. (p. 28)

KEY	FUNCTION	SECONDARY FUNCTION (While pushing [FUNC])
△/SCAN (#) ▽/SCAN (*)	• When selecting VFO or MEMORY mode: Changes the operating frequency or memory channel. (pgs. 12, 18) Starts full scan or memory scan when key is pushed and held. (p. 22) • When selecting SET mode, TIMER mode or time setting condition: Changes the display contents. (p. 29) • When selecting DTMF MEMORY mode: No function.	• When selecting VFO mode: Starts programmed scan.* (p. 22)
CLR/M▸V (A)	• When selecting VFO mode: Clears input digit before entry.* (p. 12) • When selecting MEMORY mode: Returns to VFO mode.* (p. 4) • When selecting the call channel: Returns to VFO* or MEMORY mode.	When selecting MEMORY mode or call channel: Transfers the contents into VFO when pushed and held.* (pgs. 19, 20)
MR/MW (B)	• When selecting VFO mode: Selects MEMORY mode.* (p. 17) • When selecting MEMORY mode: Changes the memory channel in units of 10.* (p. 18)	• When selecting VFO mode: Writes the VFO contents into the memory channel when pushed and held.* (p. 18) • When selecting the call channel: Writes the VFO contents into the call channel when pushed and held.* (p. 20)
(C)	Used for transmitting and programming DTMF code "C." (p. 16)	No secondary function.
CALL/LOCK (D)	Selects the call channel. (p. 20)	Turns the lock function ON and OFF. (p. 12)

3-3 Function display



❶ FUNCTION INDICATOR
Appears while the [FUNC] switch is pushed.

❷ LOCK INDICATOR (p. 12)
Appears when lock function is in use.

❸ FREQUENCY READOUT
Shows the frequency, SET mode contents or the channel indicator.
- The decimal point of the frequency flashes while scanning.

❹ MEMORY CHANNEL INDICATOR
Shows the selected memory channel number.
- " MR " appears when MEMORY mode is selected. (p. 17)
- "SKIP" appears when the selected memory channel is set as a skip channel. (p. 24)
- " C " appears when a call channel is selected. (p. 20)

❺ AI FUNCTION INDICATOR (p. 43)
Shows a function of the [AI] key or the current time.

❻ TIMER INDICATOR (pgs. 29~32)
Appears when a timer function is in use.
- "ON" appears when the power-on timer is in use.
- "OFF" appears when the power-off timer is in use.

❼ AUTO POWER-OFF INDICATOR (p. 30)
Appears when the auto power-off function is in use.

❽ PRIORITY INDICATOR (p. 26)
Appears when the priority watch is activated; flashes when the watch is paused. The priority watch does not function when the channel indication mode is selected. (p. 28)

❾ TONE INDICATOR
Appears when an optional tone or tone squelch unit is in use.

- "T" appears when the subaudible tone encoder is used. (p. 16)
- "T SQL" appears when the tone squelch is used. (p. 41)
- "T SQL ((•))" appears when the pocket beep function is in use. (p. 40)

❿ CODE SQUELCH INDICATOR (p. 39)
Appears when the code squelch is in use.

⓫ PAGER INDICATOR (p. 37)
Appears when the pager function is turned ON; flashes when a call is received.

⓬ DUPLEX INDICATOR (p. 16)
Appears when duplex is used for repeater operation.

- "DUP" appears when + duplex is selected.
- "– DUP" appears when – duplex is selected.

⓭ S/RF INDICATOR (pgs. 14, 15)
Shows the relative signal strength when receiving; shows the output power selection when transmitting.

4 BASIC OPERATION

4-1 Setting a frequency

Frequency setting cannot be performed when the channel indication mode is selected. (p. 28)

(1) Selecting VFO mode

1) Rotate [PWR/VOL] to turn power ON.

2) Push [Ⓐ CLR] once or twice to select VFO mode.

If " MR " or "C" is indicated here, the transceiver is not in VFO mode.

(2) Using the main dial

1) Push [Ⓐ CLR] to select VFO mode if another mode has been selected.

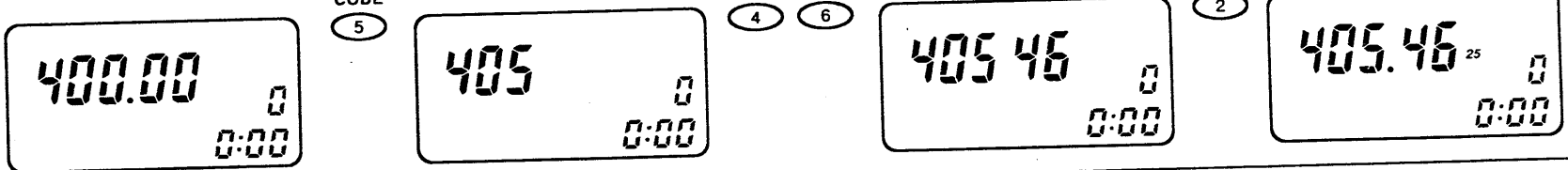
2) Rotate the main dial to set the desired frequency.

3) Use the dial select function for setting the 10 MHz digit or for quick tuning:
While pushing [FUNC], rotate the main dial.
• See p. 13 for changing the dial select step.

[EXAMPLE]: Setting the frequency to 405.4625 MHz.

Push: CLR/M►V (A) CODE (5) DUP (4) MASK (6) PGR/C-SQL (2)

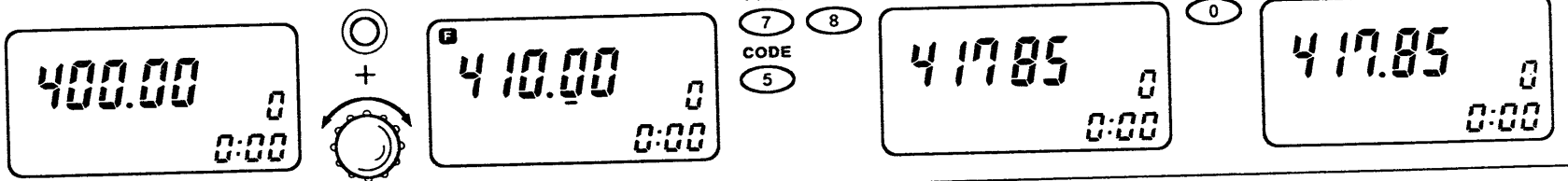
Display:



[EXAMPLE]: Setting the frequency to 417.850 MHz.

Push: CLR/M►V (A) FUNC + PRIO (7) SET (8) CODE (5) CLOCK (0)

Display:



(3) Using the numeral keys

1) Push [Ⓐ CLR] to select VFO mode if another mode has been selected.

2) Push the numeral keys corresponding to the frequency you want to input. (See diagram on the previous page.)
   - A decimal point appears when frequency input is complete.
   - [⓪] and [⑤] are acceptable for the 1 kHz digit (last digit); [②] and [⑦] are also acceptable depending on the 10 kHz digit.
   - When an unwanted digit is input, push [Ⓐ CLR] to clear it.
   - The 10 MHz digit cannot be set in this way: use the main dial, [⊛▽] or [#△] to set it.

(4) Using the △/▽ keys

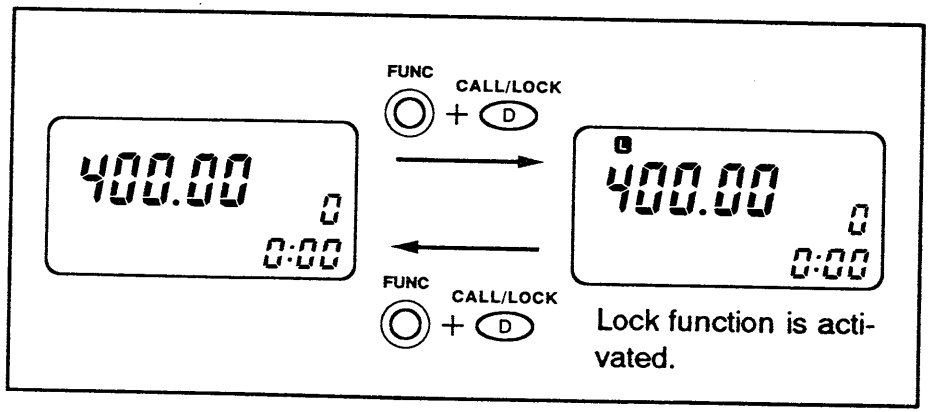
1) Push [Ⓐ CLR] to select VFO mode if another mode has been selected.

2) Push [⊛▽] or [#△]:
   - The frequency changes according to the tuning step. See p. 13 to change the tuning step.
   - Pushing the key for more than 0.5 sec. will activate full scan.
   - If the scan is started, push [⊛▽] or [#△] again to stop it.

(5) Lock function

To prevent unnecessary frequency changes and unnecessary function access, use the lock function.

◇ Push [FUNC] + [Ⓓ LOCK] to turn the lock function ON and OFF.
   - The keyboard is locked electronically.
   - [PTT], [MONI], [H/L] and [LIGHT] can be used while the lock function is in use.
   - A PTT lock function is available separately. (p. 15)



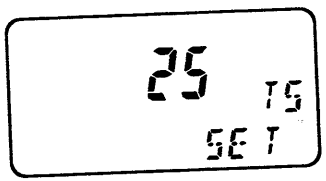
Lock function is activated.

NOTE: The main dial is locked while the normal display is selected; the main dial is not locked while the channel indication mode is selected. (p. 28)

(6) Setting a tuning or dial select step

USING SET MODE

■ SETTING A TUNING STEP



The display shows the 25 kHz tuning step.

1) Push [FUNC] + [⑧SET] to enter SET mode.

2) Push [✱▽] or [#△] one or more times to select the tuning step display.
   • "TS" appears in the display.

3) Rotate the main dial to set the tuning step.
   • 5, 10, 12.5, 15, 20, 25, 30 and 50 kHz steps are available.

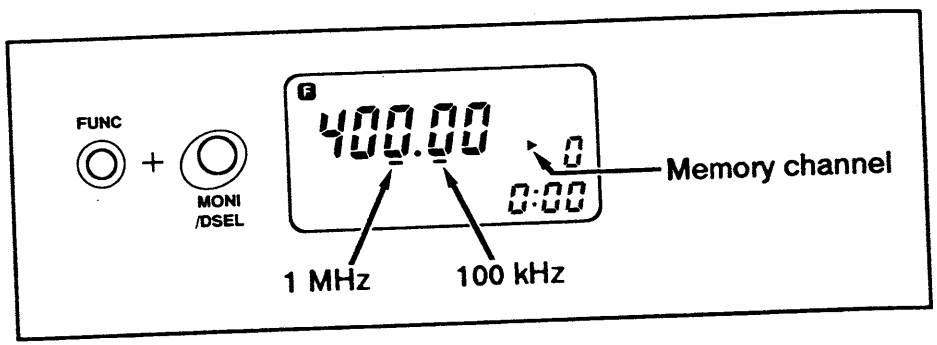
4) Push [Ⓐ CLR] to set the value and exit SET mode.

■ SETTING A DIAL SELECT STEP

In VFO mode, while pushing [FUNC], the main dial changes the frequency in 100 kHz or 1 MHz increments or changes the memory channel according to the selected step increment.

This function is useful for quick frequency selection or memory channel selection in VFO mode.

◇ Push [FUNC] + [MONI/DSEL] several times to select the desired increment.
   • The bar or "►" shows the selected dial select step.



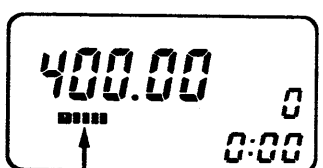
4-2 Receiving

1) Set the operating frequency or channel. (pgs. 11, 17)

2) Rotate the [SQL] to set the desired squelch level.

3) While pushing and holding [MONI/DSEL], rotate the [PWR/VOL] to set the desired volume level.

4) When receiving a signal on the set frequency, squelch opens and the transceiver emits audio.
   - The S/RF indicator shows the relative signal strength.



When receiving a signal.

NOTE: When [SQL] is set too "tight" (extremely clockwise), squelch may not open for weak signals. In this case, set the squelch to a "loose" (less clockwise) position, or push and hold [MONI/DSEL].

4-3 Transmitting

CAUTION: Transmitting without an antenna may damage the transceiver.

NOTE: To prevent interference, listen on the frequency before transmitting by pushing and holding [MONI/DSEL].

1) Set the operating frequency or channel. (pgs. 11, 17)
   - Push [H/L/DTMF] to select output power, if desired.
   - "LOW" appears when a low power is selected.
   - The low power level can be changed. (p. 15)

2) Push and hold [PTT] to transmit.
   - The transmit indicator lights up in red while transmitting.
   - The S/RF indicator shows output power selection.

3) Speak into the microphone.
   - DO NOT hold the transceiver too closely to your mouth or speak too loudly. This may distort the signal.

4) Release [PTT] to receive.

■ SELECTING A LOW OUTPUT POWER

Low output power can be selected from 3 levels to suit your operating requirements.

◇ While pushing [H/L/DTMF], rotate the main dial to set the desired low power level.

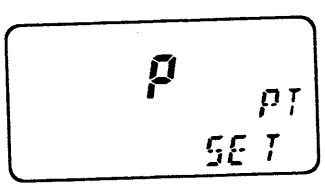
- The S/RF indicator shows the selected level below.

POWER SELECTION	S/RF INDICATOR	OUTPUT POWER	
		with 13.8 V	with 7.2 V
HIGH		5.0 W	1.5 W
LOW 3	LOW	3.5 W	1.5 W
LOW 2	LOW	1.5 W	1.5 W
LOW 1	LOW	0.5 W	0.5 W

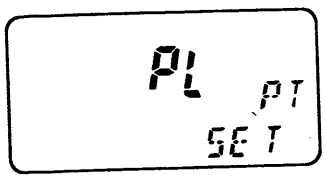
■ PTT LOCK FUNCTION

The PTT lock function locks the PTT switch to prevent accidental transmission.

USING SET MODE



The display shows the PTT lock function is OFF.



The display shows the PTT lock function is ON.

1) Push [FUNC] + [⑧SET] to enter SET mode.

2) Push [⊛▽] or [#△] one or more times to select the PTT lock display.
   - "PT" appears in the display.

3) Rotate the main dial to turn the function ON or OFF.

4) Push [Ⓐ CLR] to set the condition and exit SET mode.

4-4 Repeater operation

A repeater amplifies a received signal and transmits it at a different frequency. When using a repeater, the transmit frequency is shifted from the receive frequency by the offset frequency. It is convenient to program repeater information into memory channels 0~9. (p. 17)

1) Set the receive frequency (repeater output frequency). (pgs. 11~13)

2) Push [FUNC] + [④DUP] to select −duplex or push it again for + duplex.
   - "−DUP" or "DUP" appears to indicate the transmit frequency for minus shift or plus shift respectively.

3) Push and hold [PTT] to transmit.
   - The displayed frequency automatically changes to the transmit frequency (repeater input frequency).
   - When the repeater requires a tone, see boxes at right.
   - If "o.FF" appears, confirm the offset frequency.

4) Release [PTT] to receive.

5) Push and hold [MONI/DSEL] to check whether the other station's transmit signal can be directly received or not.

SUBAUDIBLE TONE

(An optional UT-50 is necessary.)

1) Push [FUNC] + [①T/T SQL] several times to turn ON the subaudible tone encoder until only "T" appears.
   - To set the subaudible tone frequency, see p. 42.

2) Push [FUNC] + [①T/T SQL] several times until "T" disappears to turn OFF the subaudible tone encoder.

DTMF TONES

◇ While pushing [PTT], push the desired digit key to transmit DTMF tones.
   - See p. 27 for DTMF memory channels.

USING SET MODE

■ OFFSET FREQUENCY SETTING

1) Push [FUNC] + [⑧SET] to enter SET mode.

2) Push [✱▽] or [#△] one or more times to select the offset frequency display.
   - "OW" appears in the display.

3) Rotate the main dial to set the desired offset frequency in the selected tuning steps.

4) Push [Ⓐ CLR] to set the value and exit SET mode.

5 MEMORY OPERATION

5-1 General description

The transceiver has 100 memory channels for storage of often-used frequencies. You can program the following data into a memory channel.

- Operating frequency
- Duplex direction (DUP or – DUP)
- Offset frequency*1
- Subaudible tone frequency*1 *2
- Subaudible tone encoder ON/OFF*2
- Tone squelch ON/OFF*2
- Skip information (p. 24)

*1 Memory channels 0~9 can be independently programmed.
*2 An optional UT-50 TONE SQUELCH UNIT is necessary.

When first applying power or after resetting, memory channels 10~99 are masked.

5-2 Selecting a memory channel

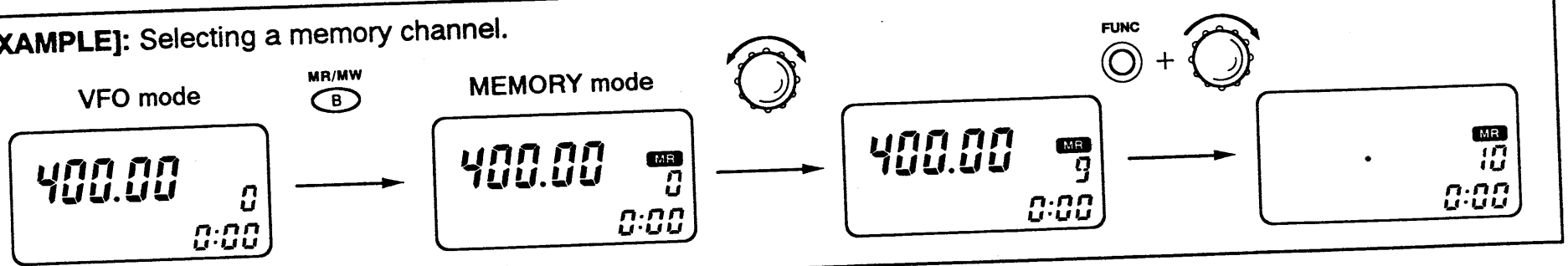
(1) Using the main dial

1) Push [Ⓑ MR] to select MEMORY mode.
   - " MR " appears.
   - If the call channel has been selected, push [Ⓓ CALL] to exit the call channel.

2) Rotate the main dial to select the desired memory channel.
   - Memory channels "PA" and "PB" are scan edge channels. (p. 23)
   - To select a masked channel, rotate the main dial while pushing [FUNC].

3) To return to VFO mode, push [Ⓐ CLR].

[EXAMPLE]: Selecting a memory channel.



(2) Using the keyboard

1) Push [Ⓑ MR] to select MEMORY mode.
   - " MR " appears.
   - If the call channel has been selected, push [Ⓓ CALL] to exit the call channel.

2) Push a numeral key to enter the first digit into the memory channel.
   - When "PA" or "PB" has been selected, use another method to select the channel.

3) Push [Ⓑ MR] to change the memory channel in units of 10.
   - All memory channels except "PA" or "PB" can be selected.

(3) Using the △ / ▽ keys

1) Push [Ⓑ MR] to select MEMORY mode.
   - " MR " appears.
   - If the call channel has been selected, push [Ⓓ CALL] to exit the call channel.

2) Push [⊛▽] or [#△] to change the memory channel.
   - Masked channels cannot be selected.

5-3 Programming a memory channel

VFO mode settings can be programmed into a memory channel. Memory channels 0~9 also memorize the SET mode contents such as subaudible tone frequency, etc.

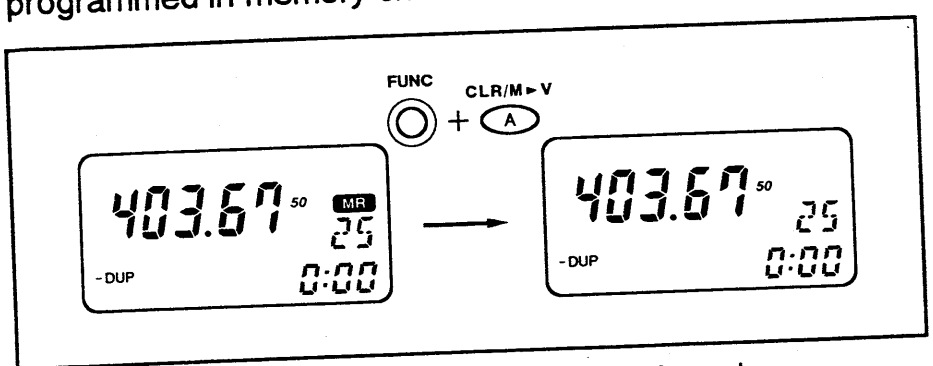
1) Select a memory channel to be programmed:
   - Push [Ⓑ MR] to select MEMORY mode. (" MR " appears.)
   - Rotate the main dial to select the memory channel.
   - To select a masked memory channel, rotate the main dial while pushing [FUNC].

2) Set the desired frequency in VFO mode:
   - Push [Ⓐ CLR] to select VFO mode.
   - Set the desired frequency using the keyboard or main dial.
   - Set other data (e.g. duplex information), if required.

3) Push [FUNC] + [Ⓑ MW] for 2 sec. to program.
   - If the beep tone is ON, 3 beeps alert you that the VFO contents are programmed. When one of memory channels 0~9 is selected, the duplex information, subaudible tone frequency, etc. are also programmed.

5-4 Transferring memory contents

This function transfers a memory channel's contents into a VFO. This is useful for searching for signals around a memory channel frequency and for recalling the offset frequency, subaudible tone frequency, etc. which are programmed in memory channels 0~9.

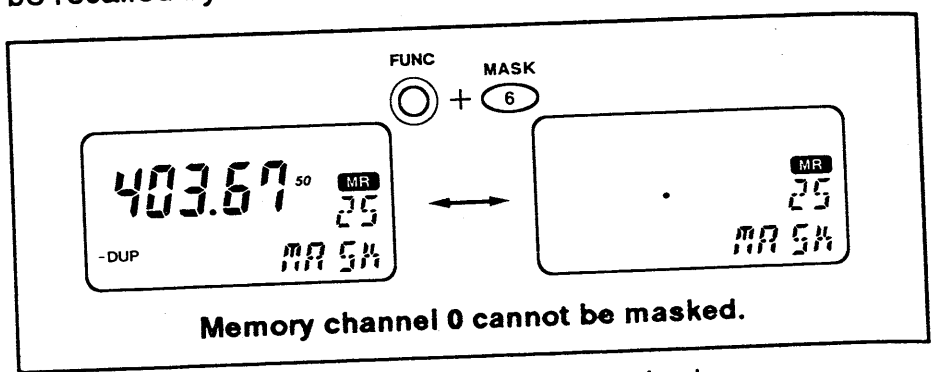


1) Select the memory channel to be transferred:
   - Push [Ⓑ MR] to select MEMORY mode. (" MR " appears.)
   - Rotate the main dial to select the memory channel.

2) Push [FUNC] + [Ⓐ M►V] for 2 sec.
   - " MR " disappears as VFO mode is automatically selected.
   - If the beep tone is ON, 3 beeps alert you that the memory channel contents are transferred. If a memory channel between 0~9 is used, the memory channel contents include the duplex information, subaudible tone frequency, etc.

5-5 Masking a memory

Unwanted memory channels can be masked (hidden). A masked memory channel cannot be selected for normal use. The contents of the masked memory, however, can be recalled by the following procedure.



Memory channel 0 cannot be masked.

1) Select the memory channel to be masked:
   - Push [Ⓑ MR] to select MEMORY mode. (" MR " appears.)
   - Rotate the main dial to select the memory channel.

2) Push [FUNC] + [⑥ MASK] to mask the memory channel.
   - Memory channel 0 cannot be masked.

3) To recall the masked memory contents, repeat step 2.

6-1 Calling up a call channel

A one-touch-access call channel is provided for operation on your most-often-used frequency.

1) Push [Ⓓ CALL] to select the call channel.
   - "C" appears.

2) To return to the previous mode, push [Ⓐ CLR].

6-2 Transferring call channel contents

1) Push [Ⓓ CALL] to select the call channel.
   - "C" appears.

2) Push [FUNC] + [Ⓐ M►V] for 2 sec.
   - "C" disappears as VFO mode is automatically selected.
   - If the beep tone is ON, 3 beeps alert you that the call channel contents, including the duplex information, subaudible tone frequency, etc., are transferred.

6-3 Programming a call channel

As well as an operating frequency, duplex information and optional subaudible tone information (tone encoder or tone squelch ON/OFF and its frequency) can be programmed into the call channel.

1) Set the desired frequency in VFO mode:
   - Push [Ⓐ CLR] to select VFO mode.
   - Set the desired frequency using the keyboard or main dial.
   - Set other data (e.g. duplex information), if required.

2) Push [Ⓓ CALL] to select the call channel.
   - "C" appears.

3) Push [FUNC] + [Ⓑ MW] for 2 sec. to program.
   - The frequency display changes to the programmed VFO contents.
   - If the beep tone is ON, 3 beeps alert you that the VFO contents, including the duplex information, subaudible tone frequency, etc., are programmed.

7 SCAN OPERATION

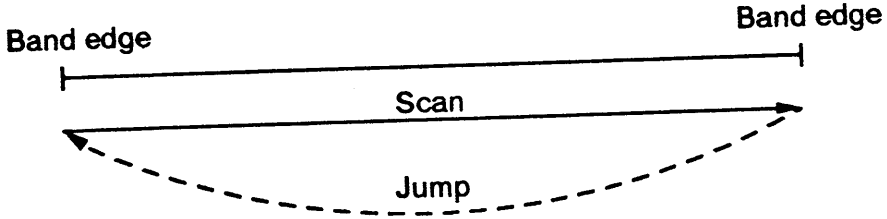
7-1 Scan types

The transceiver has 3 scan types with a skip function and 3 resume conditions to suit your needs.

When the channel indication mode is selected, only the channel scan (the same as the memory skip scan) can be used.

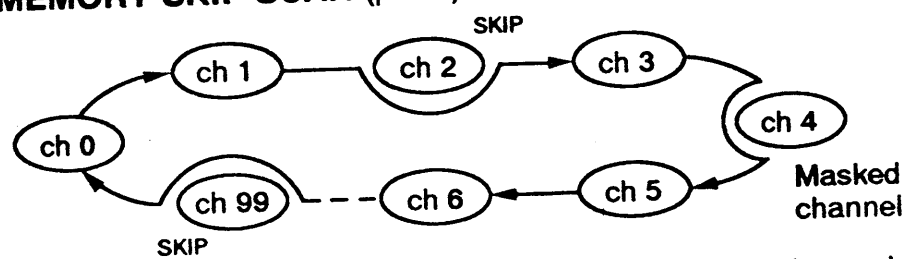
Scan does not function when either the priority watch, optional pager or code squelch is activated.

FULL SCAN (p. 22)



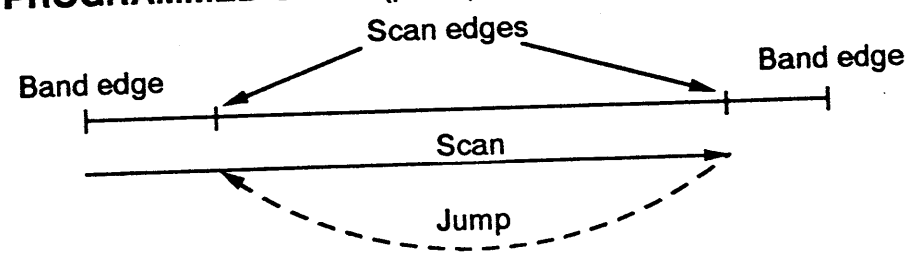
Repeatedly scans all frequencies over the entire band.

MEMORY SKIP SCAN (p. 22)



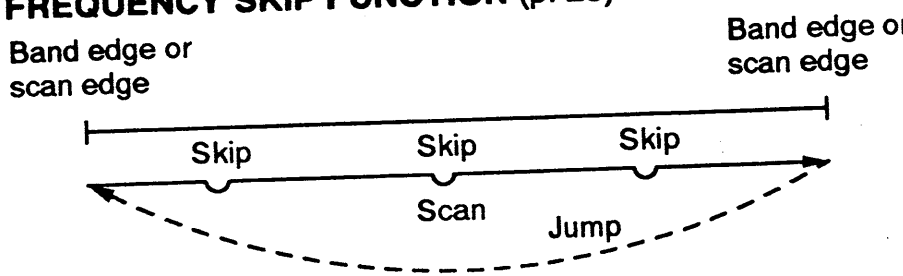
Repeatedly scans memory channels except skip channels and masked channels.

PROGRAMMED SCAN (p. 22)



Repeatedly scans between two user-programmed frequencies.

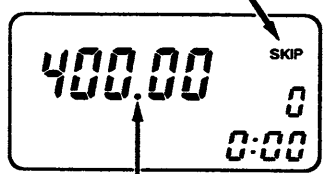
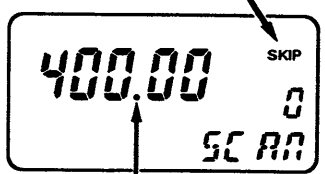
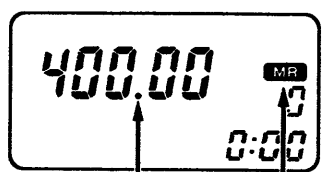
FREQUENCY SKIP FUNCTION (p. 23)



Skips unwanted frequencies that inconveniently stop scanning.

7-2 Scan operation

Refer to the following table for operating a scan. Be sure to rotate the [SQL] control clockwise until audio is muted before operating a scan.

SCAN TYPE	① PRE-OPERATION	② SCAN START	③ SCAN RESUME CONDITION	④ SCAN STOP	WHILE SCANNING
FULL SCAN	Push [Ⓐ CLR] to select VFO mode. • Set the tuning step, if desired. (p. 13)	Push and hold [⊛▽] or [#△].	• When receiving a signal, scan resumes in one of the following ways: - after pausing 10 sec. - after pausing 5 sec. - after the signal disappears. • The scan resume condition can be selected in SET mode. (p. 23) • While scanning, rotating the main dial changes the scanning direction or skips a paused frequency.	Push [⊛▽], [#△] or [Ⓐ CLR].	Blinks when frequency skip is ON.  Blinks
PROGRAM-MED SCAN	Program the scan edge frequencies. (p. 23) Push [Ⓐ CLR] to select VFO mode. • Set the tuning step, if desired. (p. 13)	While pushing [FUNC], push and hold [⊛▽] or [#△].			Blinks when frequency skip is ON.  Blinks
MEMORY SCAN	Push [Ⓑ MR] to select MEMORY mode.	Push and hold [⊛▽] or [#△].			 Blink

7-3 Setting scan conditions

(1) Programming scan edges

1) Push [Ⓑ MR], then rotate the main dial or push [⊛▽]/[#△] to select memory channel "PA."
   - If the call channel has been selected, push [Ⓓ CALL] to exit the call channel.

2) Set a scan edge frequency in VFO mode:
   - Push [Ⓐ CLR] to select VFO mode.
   - Set the desired frequency using the keyboard or main dial.

3) Push [FUNC] + [Ⓑ MW] for 2 sec. to program.
   - The transceiver emits 3 beeps if the beep tone is ON.

4) Push [Ⓑ MR], then push [# △] to select memory channel "PB."

5) Set the other scan edge frequency in VFO mode:
   - Push [Ⓐ CLR] to select VFO mode.
   - Set the desired frequency using the keyboard or main dial.

6) Push [FUNC] + [Ⓑ MW] for 2 sec. to program.
   - The transceiver emits 3 beeps if the beep tone is ON.

(2) Scan resume condition *USING SET MODE*

1) Push [FUNC] + [⑧SET] to enter SET mode.

2) Push [⊛ ▽] or [# △] one or more times until "SC" appears in the display.

3) Rotate the main dial to set the desired timer.
   - "t-10" : Scan pauses 10 sec. while receiving a signal.
   - "t-05" : Scan paused 5 sec. while receiving a signal.
   - "P-02" : Scan pauses until a signal disappears and then resumes 2 sec. after that.

4) Push [Ⓐ CLR] to exit SET mode.

(3) Frequency skip function

Unwanted frequencies can be skipped and programmed as skip channels when full or programmed scan is pausing.

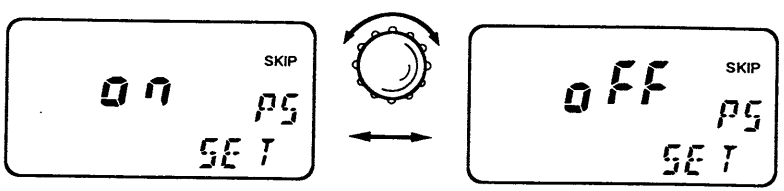
1) Start full or programmed scan. (p. 22)

2) Push [FUNC] + [Ⓑ MW] for 2 sec. to program the received frequency as a skip frequency.
   - The transceiver emits 3 beeps and the scan resumes.
   - Masked memory channels 99~10 are used in reverse sequence.

(4) Frequency skip function on/off

The frequency skip function can be turned OFF in SET mode. In this case, the frequencies will not be skipped even if skip information is programmed and "SKIP" will not blink while scanning.

USING SET MODE



The frequency skip function is ON.

The frequency skip function is OFF.

1) Push [FUNC] + [⑧SET] to enter SET mode.

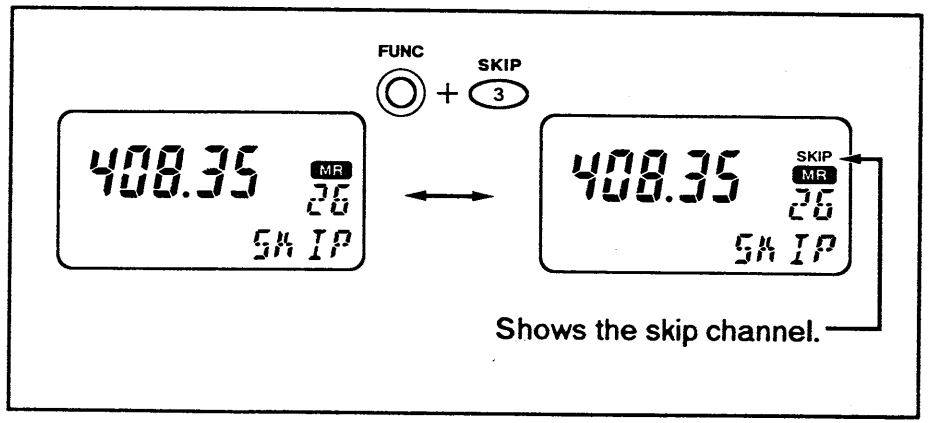
2) Push [⊛▽] or [#△] one or more times until "PS" appears in the display.

3) Rotate the main dial to turn the frequency skip function "on" or "oFF."
   - When selecting "on," the frequency skip function for full scan and programmed scan is turned ON.

4) Push [Ⓐ CLR] to exit SET mode.

(5) Skip channel setting

Memory channels not desired can be skipped during memory scan. These skip channels are also skipped during priority watch (memory scan watch) and the frequencies of the channels are skipped during full or programmed scan.



1) Select the memory channel to be programmed as a skip channel:
   - Push [Ⓑ MR]; then rotate the main dial or push the [⊛▽] or [#△] keys to select the desired memory channel.

2) Push [FUNC] + [③ SKIP] to set the memory channel to the skip channel.
   - "SKIP" appears.

3) Repeat step 2) to cancel a skip channel.
   - "SKIP" disappears.

8 PRIORITY WATCH

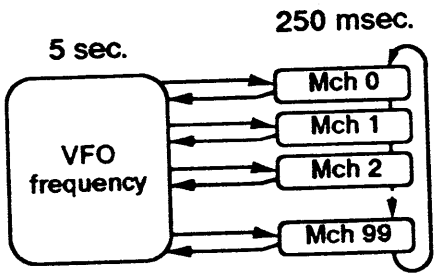
8-1 Priority watch types

The priority watch checks for signals on a memory or call channel every 5 sec. while operating on a VFO frequency. The transceiver has 3 priority watch types to suit your needs. You can transmit on the VFO frequency while the priority watch operates.

When receiving a signal, priority watch pauses for 15 sec. (if the signal disappears within 15 sec., the watch resumes).

The priority watch cannot be used when the channel indication mode is selected. (p. 28)

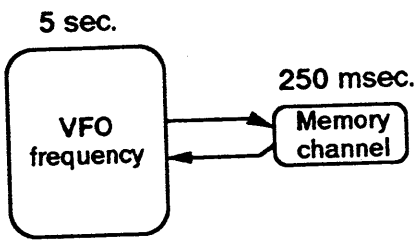
MEMORY SCAN WATCH



While operating on a VFO frequency, priority watch checks for signals on each memory channel in sequence.

- For shorter scanning intervals, program unwanted channels as skip memory channels. See p. 24 for details.

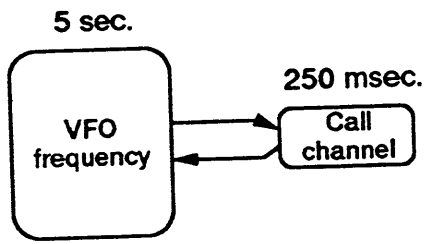
MEMORY CHANNEL WATCH



While operating on a VFO frequency, priority watch checks for signals on a selected memory channel every 5 sec.

- When the selected memory channel is masked (hidden), the watch does not start.
- Skip memory channels can be selected.

CALL CHANNEL WATCH



While operating on a VFO frequency, priority watch checks for a signal on the call channel every 5 sec.

8-2 Priority watch operation

Refer to the following table to operate a priority watch. Be sure to rotate the [SQL] clockwise until audio is muted before operating any of the watches.

NOTE: Turn the optional pager or code squelch OFF to start the priority watch.

PRIORITY WATCH TYPE	① PRE-OPERATION	② START	③ RESUME CONDITION	④ STOP
VFO ↔ MEMORY CHANNEL	1) Set a VFO frequency and the squelch. 2) Select the memory channel to be watched.	While pushing [FUNC], push [⑦ PRIO].	• Priority watch pauses for 15 sec. when a signal is received on a watching channel or resumes 2 sec. after the signal disappears. • While the watch pauses, pushing [Ⓐ CLR] resumes the watch manually.	Push [Ⓐ CLR]. • When receiving on a memory or call channel, push [Ⓐ CLR] twice. • For memory channel/scan watch, pushing [Ⓑ MR], selects MEMORY mode. • For call channel watch, pushing [Ⓓ CALL] selects the call channel.
VFO ↔ CALL CHANNEL	1) Set a VFO frequency and the squelch. 2) Push [Ⓓ CALL] to select the call channel.			
VFO ↔ MEMORY SCAN	1) Set a VFO frequency and the squelch. 2) Start memory channel scan.			

9 DTMF MEMORY

9-1 Programming a DTMF code

The transceiver has 16 DTMF memory channels for storing your most-often-used DTMF codes of up to 15 digits.

1) Push [FUNC] + [H/L/DTMF] to select DTMF MEMORY mode.

2) Rotate the main dial to select the desired channel.

3) Push [FUNC] + [⑧ SET] to start; then push the desired keys.
   - Push [H/L/DTMF] and repeat 3) when making a mistake.

4) Push [H/L/DTMF] to store the entered digits.
   - If 15 digits are input, this is not necessary.

5) Push [H/L/DTMF] or [PTT] to exit DTMF MEMORY mode.
   - When [H/L/DTMF] is pushed, the transceiver emits the programmed code.

9-2 Transmitting a DTMF code

1) Push [FUNC] + [H/L/DTMF] to select DTMF MEMORY mode.

2) Rotate the main dial to select the desired channel.

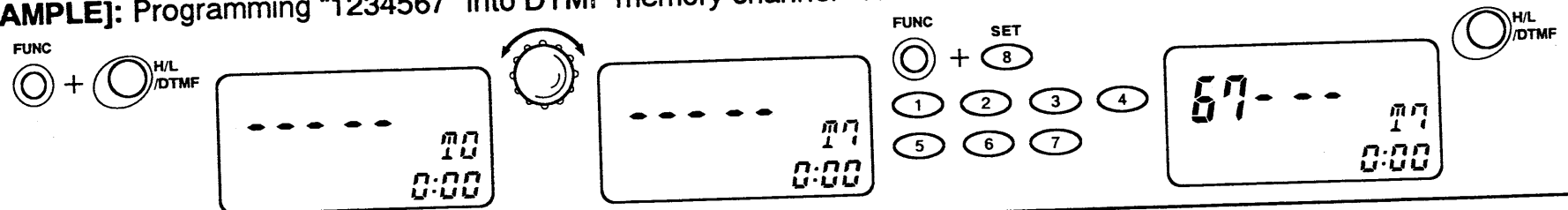
3) Push [PTT] to exit DTMF MEMORY mode.
   - Pushing [H/L/DTMF] also exits DTMF MEMORY mode.

4) While pushing [PTT], push [H/L/DTMF].
   - The function display shows the DTMF digits sent.

Transmit a DTMF code manually:

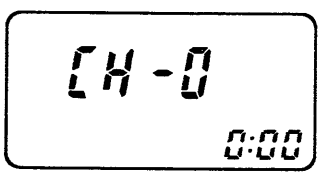
◇While pushing [PTT], push the key of the desired DTMF digit.
   - 1~0, A~D, ✳ (E) and # (F) are available.

[EXAMPLE]: Programming "1234567" into DTMF memory channel "T7."

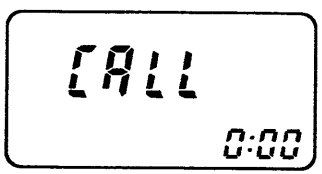


10-1 Channel indication mode

The transceiver has 2 indication modes: frequency and channel indication modes. The channel indication mode shows pre-programmed memory channels and does not show the operating frequency. Setting an operating frequency, writing a memory channel, masking a memory channel, selecting a masked channel and priority watch cannot be performed.



Memory channel display



Call channel display

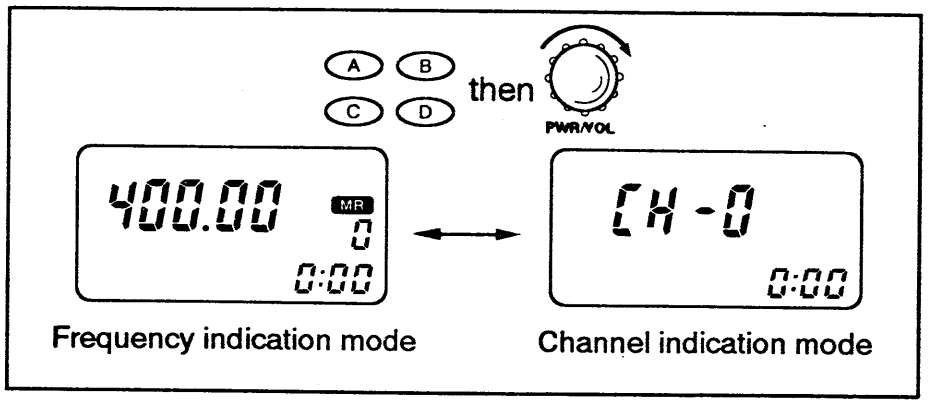
NOTE: In the channel indication mode, memory channels can be selected by the main dial even when the lock function is in use. (p. 12)

10-2 Changing the indication mode

1) When the lock function is in use, push [FUNC] + [Ⓓ LOCK] to turn the function OFF.
   • " 🔒 " disappears.

2) Turn power OFF.

3) While pushing [Ⓐ], [Ⓑ], [Ⓒ] and [Ⓓ], turn power ON to change the indication mode.

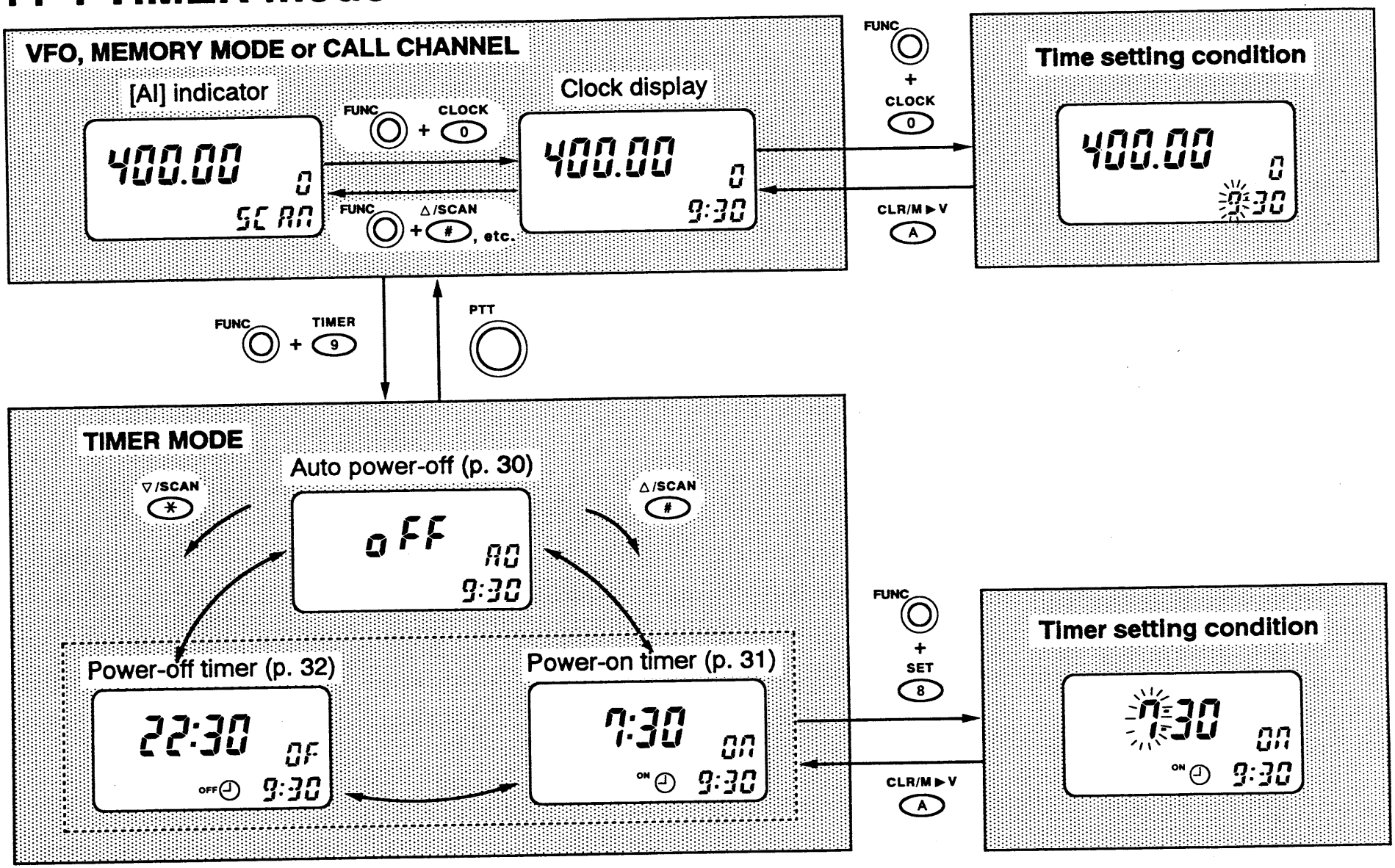


Frequency indication mode

Channel indication mode

11 CLOCK AND TIMERS

11-1 TIMER mode



11-2 Clock operation

(1) Calling up the clock display

◇ Push [FUNC] + [⓪CLOCK] to call up the clock display.

- When the channel indication mode is selected, the clock is always displayed. (p. 28)

(2) Setting the clock

1) When the AI function indicator shows a function, push [FUNC] + [⓪CLOCK] to call up the clock display.

2) Push [FUNC] + [⓪CLOCK] to enter the time setting condition.
   - The hour digit blinks.

3) Rotate the main dial to set the hour. (24-hour system)

4) Push [⊛▽] or [#△]; then rotate the main dial to set the minutes.

5) To start the clock, push [Ⓐ CLR].
   - The clock starts from 0 sec. and " : " blinks.

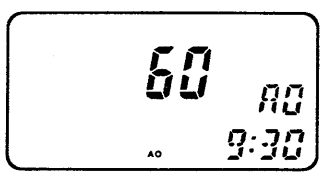
6) To cancel the setting time and exit the time setting condition, push [PTT].

TIME ERROR: ± 1 min./week

11-3 Auto power-off

The transceiver automatically turns OFF after a selected period in which no switch is pushed.

60 min., 40 min., 20 min. and OFF can be selected. The selected period is retained even when the transceiver is turned OFF by the auto power-off function. To cancel the function, select "oFF" in step 3) below.



The display shows an auto power-off period of 60 min.

1) Push [FUNC] + [⑨TIMER] to select the TIMER mode.

2) Push [⊛ ▽] or [# △] to select the auto power-off display.

3) Rotate the main dial to select the auto power-off time.

4) Push [PTT] to exit TIMER mode.
   - When the set period passes, the power is automatically turned OFF with 5 beeps.

NOTE: To turn power ON while in the OFF condition, turn power OFF then ON again using [PWR/VOL].

11-4 Power-on timer

Use the power-on timer to suit your schedule and to save battery power. While the timer is activated, the transceiver is in the OFF condition, the function display shows the clock time and the timer indicator and the transmitter and receiver circuits do not operate.

1) Push [Ⓐ CLR] to select VFO mode; then rotate the main dial to set the operating frequency.

2) Adjust [PWR/VOL] to the desired audio level.

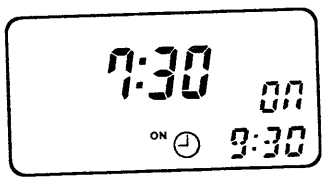
3) Push [FUNC] + [⑨ TIMER] to select TIMER mode.

4) Push [⊛▽] or [#△] to select the power-on display.

5) Push [FUNC] + [⑨ TIMER] to recall the previous power-on time.

6) Set the power-on time:
   - Push [FUNC] + [⑧ SET]; then rotate the main dial to set the hour.
   - Push [⊛ ▽] or [# △]; then rotate the main dial to set the minutes.
   - Push [Ⓐ CLR] to enter the time.

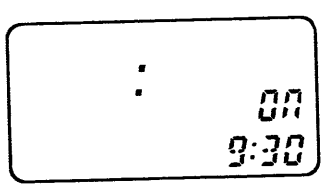
7) Push [FUNC] + [Ⓐ CLR] to activate the power-on timer.
   - The function display shows the time and the transceiver is in the OFF condition.
   - When the set time arrives, the power is automatically turned on with 5 beeps.
   - To turn power ON while in the OFF condition, turn power OFF then ON again using [PWR/VOL].



The display shows the power-on time for 7:30.

Cancel the power-on timer:

1) Repeat steps 3)~5) to mask the set time.



The display shows the power-on timer is cancelled.

2) Push [PTT] to exit the TIMER mode.

11-5 Power-off timer

Like the power-on timer, the power-off timer can be set to suit your schedule and conserve battery power. When the timer is activated, the timer indicator appears in the function display and the transceiver operates normally until the pre-set time at which it will turn OFF.

1) Push [FUNC] + [⑨ TIMER] to select TIMER mode.

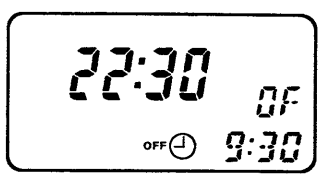
2) Push [✱▽] or [#△] to select the power-off display.

3) Push [FUNC] + [⑨ TIMER] to recall the previous power-off time.

4) Set the power-off time:
   - Push [FUNC] + [⑧ SET]; then rotate the main dial to set the hour.
   - Push [✱ ▽] or [# △]; then rotate the main dial to set the minutes.
   - Push [Ⓐ CLR] to enter the time.

5) To activate the power-off timer, push [PTT] to exit TIMER mode.
   - Turn OFF the auto power-off function when using the power-off timer. (p. 30)

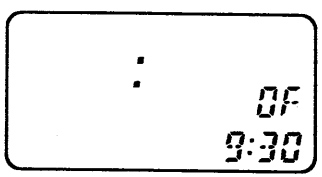
6) When the set time arrives, the power is automatically turned OFF with 5 beeps.
   - To turn power ON while in the OFF condition, turn power OFF then ON again using [PWR/VOL].



The display shows the power-off time for 23:30.

Cancel the power-off timer:

1) Repeat steps 1)~3) to mask the set time.



The display shows the power-off timer is cancelled.

2) Push [PTT] to exit the TIMER mode.

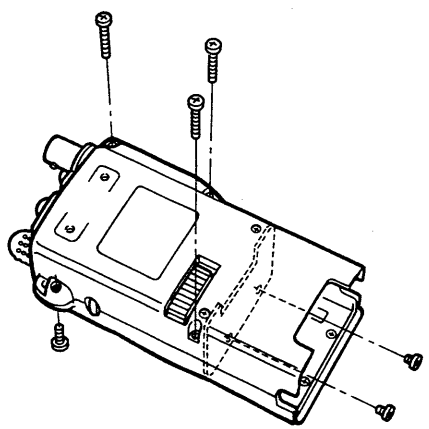
12 OPTIONAL UNIT OPERATION

12-1 Unit installations

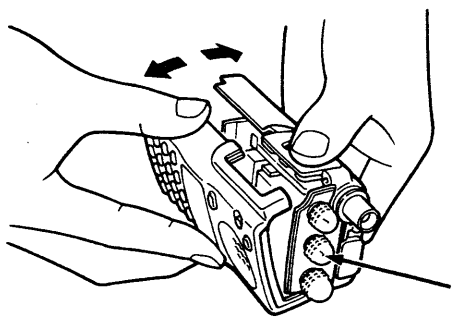
(1) Disassembling the transceiver

1) Turn power OFF, then remove the battery case.

2) Unscrew the 6 screws as shown in the diagram.



3) Carefully open the transceiver.



Keep the top unit attached to the rear panel.

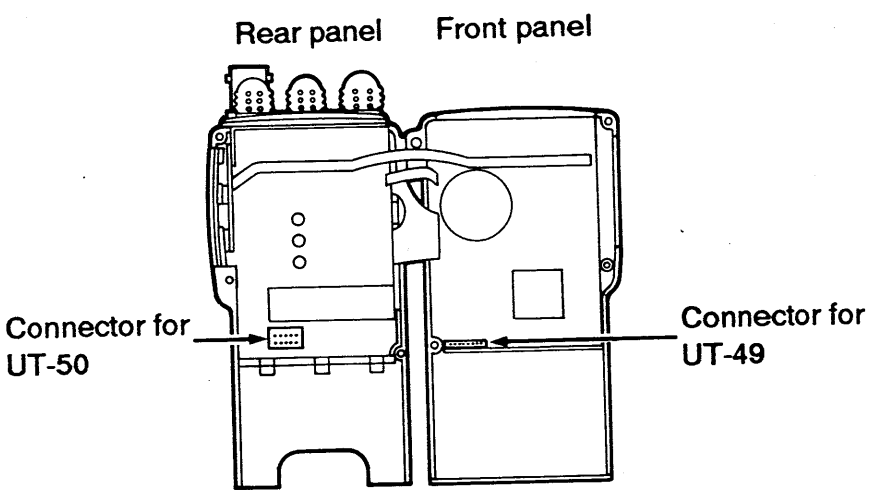
CAUTION: Flexible cables are fragile and can be damaged by mishandling.

(2) Installation locations

UT-49 DTMF DECODER UNIT (pgs. 34~39)
Provides pager and code squelch functions.

UT-50 TONE SQUELCH UNIT
Provides pocket beep and tone squelch functions. (pgs. 40~42) Also functions as a programmable tone encoder. (p. 16)

Install an optional unit as shown in the the diagram below:



● After installing the unit, reassemble the transceiver.

12-2 Pager function

The pager function is a selective calling system using DTMF codes. With the pager, you can call any one or all the stations in your group, and you can receive a specified call from a station in your group. To use the pager function in your group, all stations need the pager function.

The transmit station sends a code consisting of a transmit code and the transmit station's ID code. If the transmit code matches the code programmed in the code channel of the receive station, the receive station's transceiver informs the operator with beeps. For a personal call, the ID code of the receive station is used as the transmit code. For a group call, the group code is used as the transmit code.

The pager code for a call =

Transmit code + "✱" + Transmit station's ID code.

The receive station can recognize the transmit station by the received ID code of the transmit station and can easily answer back because the received ID code is automatically programmed as a transmit code for answer back.

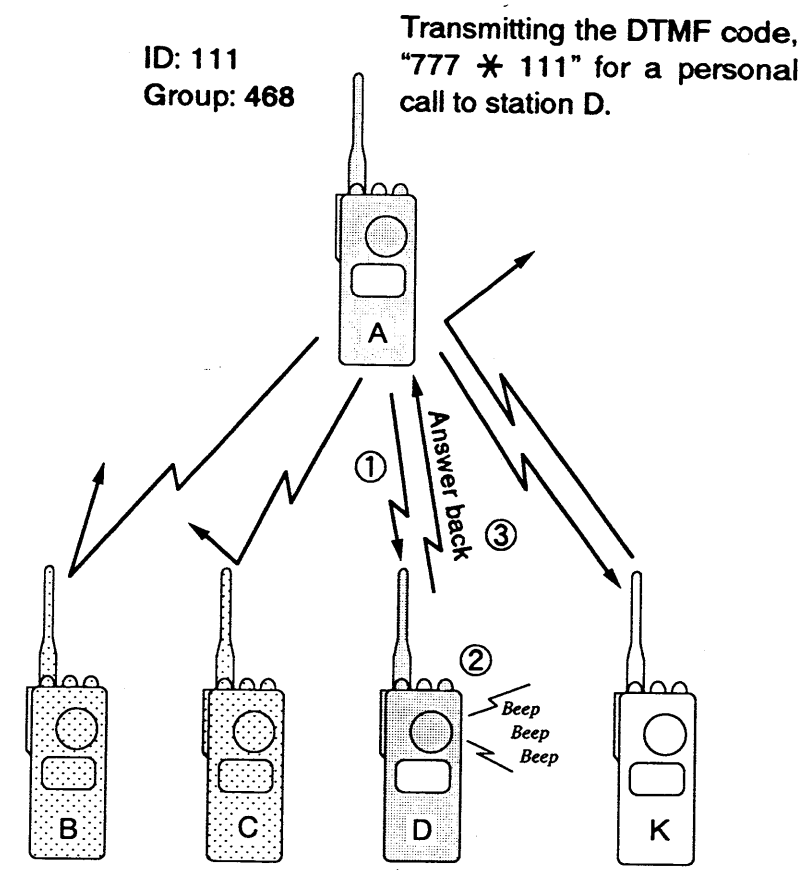
The pager code for answer back =

Received ID code + "✱" + Receive station's ID code

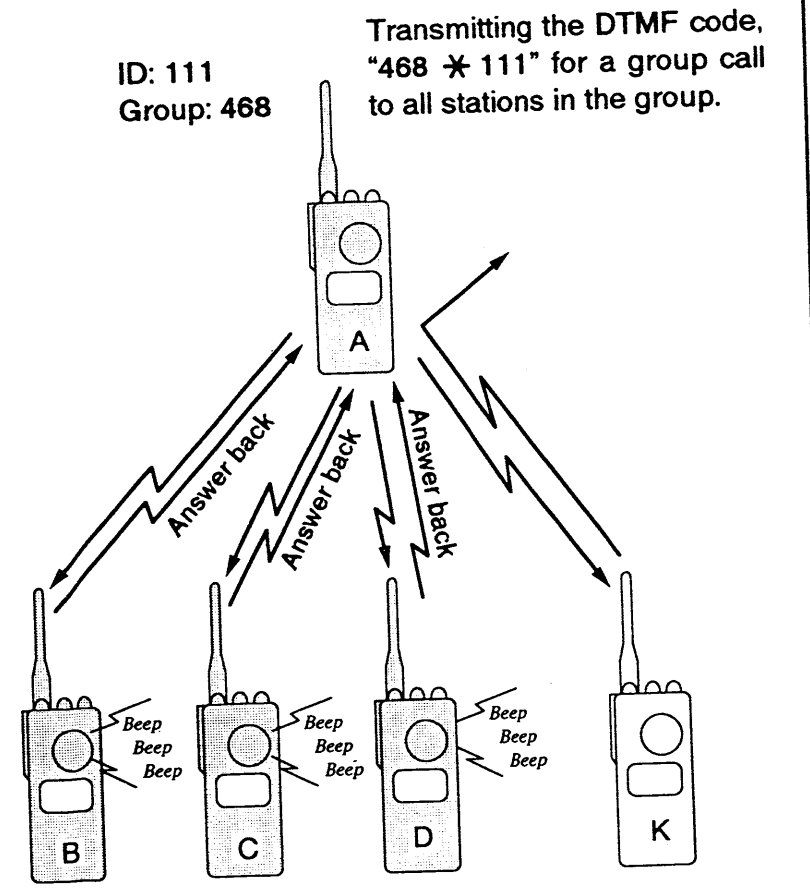
During pager or code squelch operation, the power saver duty rate becomes 1:1 if the power saver is activated.

An optional UT-49 is necessary for operation.

[PAGER SIMULATION]: Personal call



[PAGER SIMULATION]: Group call



12-3 Code channel

• Before programming

The pager and code squelch functions require ID codes and a group code. These codes are 3-digit DTMF codes and must be written into the code channels before operation.

• Code channel assignment

ID or group code	Code channel number	"Receive accept" or "Receive inhibit"
Your ID code	C0	"Receive accept" only.
Other station's ID code	C1~C5	"Receive inhibit" should be programmed in each channel.
Group code	One of C1~C5	"Receive accept" must be programmed.
Memory space*	CP	"Receive inhibit" only.

* Channel CP automatically memorizes an ID code when receiving a pager call. The contents in channel CP cannot be changed manually.

"RECEIVE ACCEPT" OR "RECEIVE INHIBIT"

Code channels C1~C5 should be effectively programmed as "Receive accept" or "Receive inhibit."

- "Receive accept" ("SKIP" indicator is not illuminated) accepts pager calls when the transceiver receives a signal with a code the same as that in the code channel.

- "Receive inhibit" ("SKIP" indicator is illuminated) rejects calls when the transceiver receives a signal with a code the same as that in the code channel.

For example, the code channel that stores the group code should be programmed as "Receive accept." If the channel is programmed as "Receive inhibit," you cannot receive group calls.

The code channels that store other station's ID codes for a transmit code should be programmed as "Receive inhibit." If the channels are programmed as "Receive accept," personal calls for stations other than yours will be received.

12-4 Programming a code channel

1) Push [FUNC] + [⑤ CODE], then rotate the main dial to select the desired code channel.
   - Code channel CP cannot be used for programming.

2) Push numeral keys to enter the desired digit code.
   - Digits are automatically stored once the 3rd digit has been entered.
   - When an unwanted digit is entered, push [Ⓐ CLR] and enter the desired digit.

3) Push [FUNC] + [③ SKIP] to set the code channel for "Receive inhibit" or "Receive accept."
   - When "Receive inhibit" is set, "SKIP" is illuminated.
   - Code channel C0 cannot be set as "Receive inhibit."

4) Push [PTT] to exit the code channel.

12-5 Pager operation

(1) Personal or group calls

1) Push [Ⓐ CLR] to select VFO mode; then, rotate the main dial to set the operating frequency.
   - An optional tone squelch can be used with the pager function. (p. 41)

2) Push [FUNC] + [⑤ CODE]; then, rotate the main dial to select a code channel.
   - Select a code channel which includes the ID code of the receive station or the group code to be used as a transmit code.

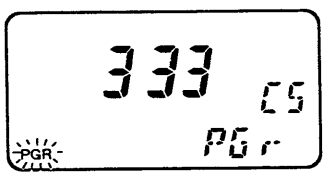
3) Push [PTT] to exit the setting display.

4) Push [FUNC] + [② PGR] to turn the pager function ON.
   - "PGR" appears.

5) Push [PTT] to transmit the pager code.
   - The speaker emits the pager code.

6) Wait for an answer back.
   - When the transceiver receives the answer back code, the function display shows as follows with a beep.

When called with your group code:
Group code appears.



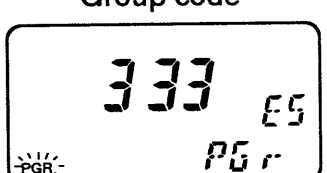
When called with your ID code:
Other station's ID code appears.

7) After confirming a connection, push [PTT] to display the operating frequency.

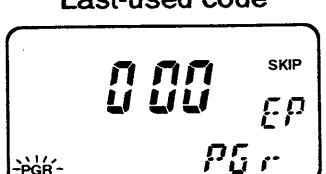
8) Push [FUNC] + [② PGR/C-SQL] once to select the code squelch or twice to select the non-selective calling system and exit the pager function.

Error information:
When the transceiver receives an incomplete signal, the function display shows "E" and the last used code or group code.

Group code



Last-used code



(2) Waiting for a call from a specific station

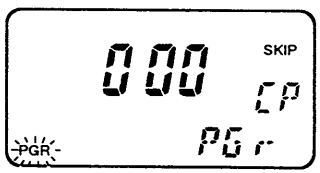
1) Push [Ⓐ CLR] to select VFO mode; then, rotate the main dial to set the operating frequency.
   - An optional tone squelch can be used with the pager function. (p. 41)

2) Push [FUNC] + [② PGR] to turn the pager function ON.
   - "PGR" appears.

3) Wait for a call.
   - When the transceiver receives the correct code, the function display shows the code as follows with a beep:

When called with your group code:
Group code appears.

When called with your ID code:
Other station's ID code appears.

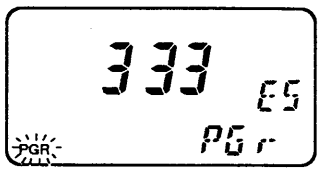


4) Push [PTT] to transmit an answer back call and display the operating frequency.

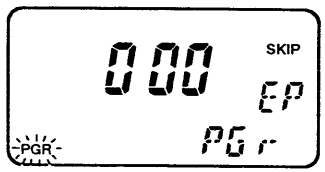
5) Push [FUNC] + [② PGR/C-SQL] once, to select the code squelch, or twice, to select the non-selective calling system and exit the pager function.

Error information:
When the transceiver receives an incomplete signal, the function display shows "E" and the last used code or group code.

Group code



Last-used code



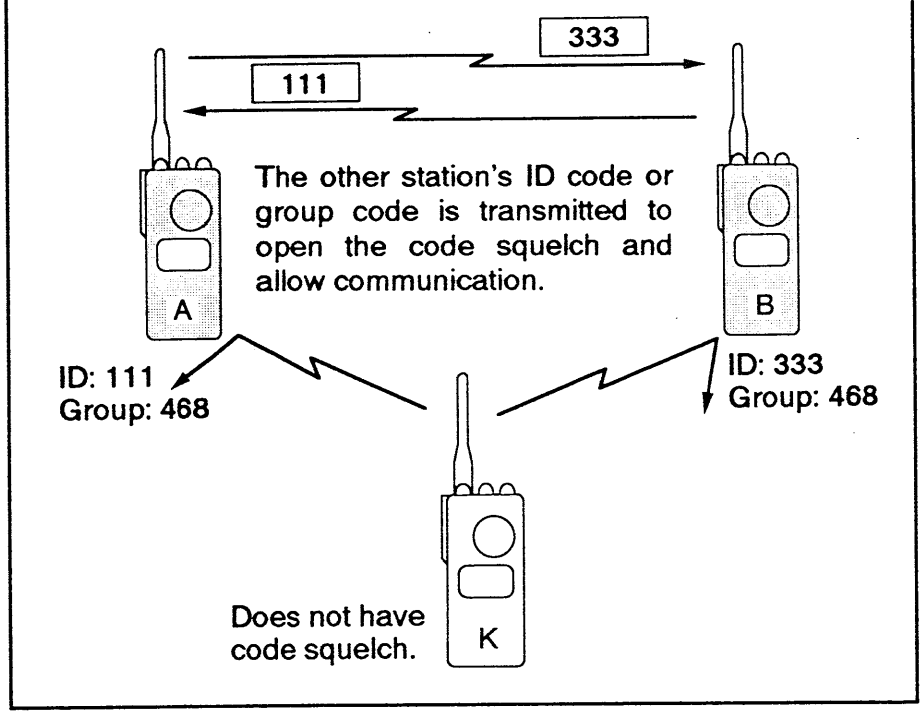
12-6 Code squelch

Code squelch allows communication with quiet standby since you will only receive calls from stations which know your ID or group code.

Prior to voice transmission, the ID code of the transmitting station is transmitted in order to open the receiving station's code squelch.

An optional UT-49 is necessary for operation.

[CODE SQUELCH SIMULATION]



1) Push [Ⓐ CLR] to select VFO mode; then, rotate the main dial to set the operating frequency.
   - An optional tone squelch can be used with the code squelch function. (p. 41)

2) Push [FUNC] + [⑤ CODE]; then, rotate the main dial to select a code channel.
   - Select a code channel which includes the ID code of the receive station or the group code to be used as a transmit code.
   - After calling with the pager, the transmit code is automatically set. Skip to step 4) below.

3) Push [PTT] to exit the setting display.

4) Push [FUNC] + [② PGR] once during pager operation or twice during non-selective calling to turn the code squelch function ON.
   - "C SQL" appears.

5) Operate the transceiver in the normal way (push [PTT] to transmit; release [PTT] to receive).
   - A 3-digit transmit code is sent each time [PTT] is pushed.

6) To cancel the code squelch, push [FUNC] + [② PGR].
   - "C SQL" disappears.

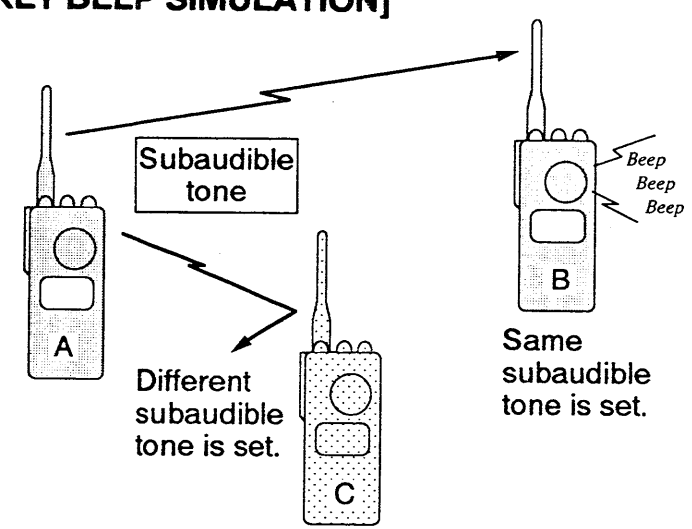
12-7 Pocket beep

An optional UT-50 is necessary for operation.

The pocket beep function is a selective calling system using a subaudible tone. If your transceiver receives a subaudible tone that matches the tone programmed into your transceiver, beeps are emitted for up to 30 sec. to alert you.

To call a station with the pocket beep function, transmit a subaudible tone that matches the tone of the receiving station. (The receiving station must also have the pocket beep function).

[POCKET BEEP SIMULATION]



(1) Waiting for a call from a specific station

1) Program the subaudible tone frequency in SET mode.
   - See for p. 42 for programming details.

2) Push [FUNC] + [①T/T SQL] several times until "((•))" appears on the function display.
   - Turn OFF the optional pager or code squelch to activate the pocket beep. (pgs. 37~39) The pocket beep cannot be used in combination with the pager or code squelch.

3) When a signal with the correct tone is received, the transceiver emits beep tones for 30 sec. and flashes "((•))."

4) Push [PTT] to answer or push [Ⓐ CLR] to stop the beeps and flashing.
   - Tone squelch is automatically selected.

(2) Calling a waiting station using pocket beep

A subaudible tone matched with the waiting station's tone frequency is necessary. Use the tone squelch on p. 41 or a subaudible tone encoder (p. 16).

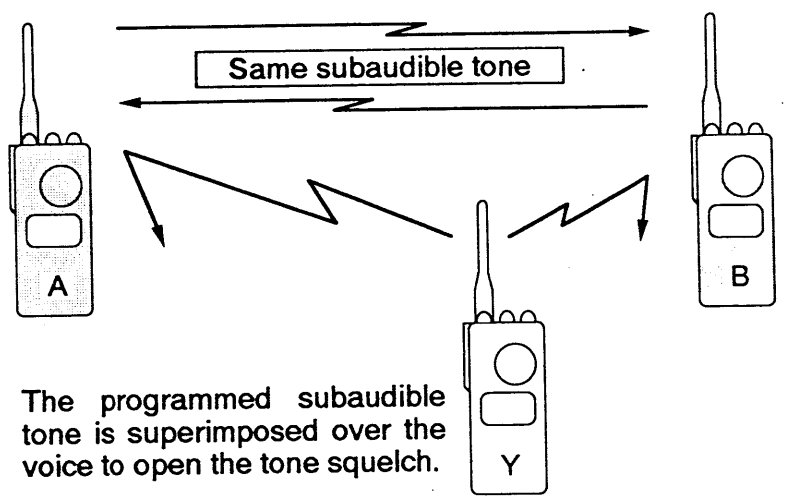
12-8 Tone squelch

An optional UT-50 is necessary for operation.

Tone squelch is used for private communication and allows quiet standby since you will receive calls only from stations which know the subaudible tone frequency programmed into your transceiver. You can use tone squelch simultaneously with the pager or code squelch.

A subaudible tone is superimposed over your voice signal while pushing [PTT] in order to open the tone squelch of the receive station.

[TONE SQUELCH SIMULATION]



The programmed subaudible tone is superimposed over the voice to open the tone squelch.

1) Program the subaudible tone frequency in SET mode.
   - See for p. 42 for programming details.

2) Push [FUNC] + [①T/T SQL] several times until "T SQL" appears on the function display.
   - The code squelch can be used together with the tone squelch. (p. 39)

3) When the received signal includes the correct tone, the squelch opens and the signal can be heard.
   - When the received signal does not include the correct tone, squelch does not open; only the green indicator lights up.
   - To open the squelch manually, push and hold [MONI].

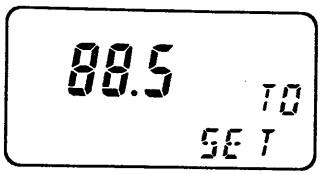
4) Operate the transceiver in the normal way (push [PTT] to transmit; release [PTT] to receive).

5) To cancel the tone squelch, push [FUNC] + [①T/T SQL] several times until "T" or "T SQL" disappears from the function display.

USING SET MODE

■ SETTING A SUBAUDIBLE TONE FREQUENCY

(An optional UT-50 is necessary.)



The display shows the 88.5 Hz subaudible tone frequency.

1) Push [FUNC] + [⑧SET] to enter SET mode.

2) Push [⊛▽] or [#△] one or more times to select the subaudible tone display.
   • "TO" appears in the display.

3) Rotate the main dial to set the subaudible tone frequency.

4) Push [Ⓐ CLR] to set the value and exit SET mode.

• Subaudible tone frequency list

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

13 AI FUNCTION

13-1 What does AI in the transceiver do?

The AI in this transceiver has 2 important functions, "Learning Function" and "Automatic Order Selection." The AI does not act when the channel indication mode is selected. (p. 28)

• Learning function

The AI automatically assigns one of the transceiver functions, shown in the table at right, to the [AI] key after it is used. This function is then displayed in the function display and can be conveniently reaccessed by simply pushing the [AI] key. Because the transceiver 'learns' the last used function, this is called the "Learning Function."

In some cases, this automatic assignment of functions to the [AI] key may be inconvenient and for this reason the learning function can be turned OFF. The transceiver functions can then be manually assigned to the [AI] key.

• Automatic order selection

The AI changes the order in which functions can be selected via the [AI] key. To illustrate this, push and hold the [AI] key; then, rotate the main dial. Let's say you find the following order: [MASK], [SCAN], [PRIO], [DUP], etc. and you push the [AI] key when [PRIO] appears. The order changes to [PRIO], [MASK], [SCAN] and [DUP]. In other words, the AI keeps track of which function you use and when. It then orders them accordingly. This order is convenient when the learning function is OFF and you are manually assigning transceiver functions to the [AI] key.

DISPLAY	FUNCTION
TONE *	Tone encoder/Tone squelch/Pocket beep
PGr *	Pager/Code squelch
SKIP	Skip setting
DUP	Duplex setting
CODE *	Code setting
MASK	Memory mask
Pr-IO	Priority watch
SET	SET mode
TIME	Timer setting
SCAN	Scan
0:00	Time indication

* These indications appear when an optional unit is installed.

13-2 Learning function

(1) When the learning function is ON:

[Example – to use the [AI] key as [FUNC] + [⑥MASK].]

1) Select a memory channel to mask.

2) Push [FUNC] + [⑥MASK].
   - Confirm that "MASK" is indicated in the AI function indicator – this means the [MASK] is now assigned to the [AI] key.

3) Push [AI] again to recall the masked channel.

4) Select another memory channel to mask.

5) Push [AI] to mask the memory channel.

NOTE: While the learning function is ON, the [AI] key will activate your most recently used function: [FUNC] + [X]. To manually assign functions to the [AI] key, the Learning Function must be OFF.

(2) Turning the learning function on/off

◇ While pushing [Ⓐ CLR] and [AI], turn the power ON to deactivate/activate the learning function.
   - All display indications appear for 2 sec.

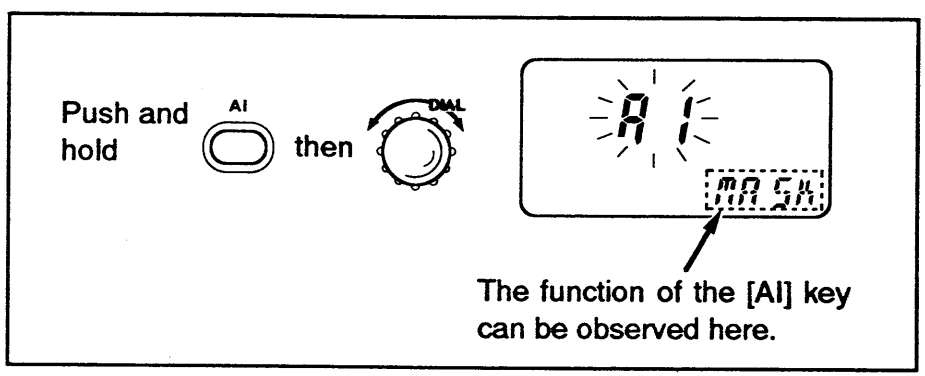
13-3 Setting a function to the [AI] key manually

1) To select AI selection mode, push and hold [AI] until "AI" flashes in the display.

2) Rotate the main dial to select the desired function.
   - The function order can be observed in the display as you rotate the main dial.

3) Push [AI] to exit AI selection mode.
   - Push [PTT] to cancel the selection and exit AI selection mode.

4) To acivate the function you have assigned to the [AI] key, push [AI].



14 ADDITIONAL FEATURES

14-1 Display contrast

There are 4 levels of display contrast. To set the desired level:

USING SET MODE

1) Push [FUNC] + [⑧SET] to enter SET mode.
2) Push [⊛▽] or [#△] one or more times until "LC" appears in the function display.
3) Rotate the main dial to select the desired contrast.
   • 1 (lightest)~4 (heaviest).

14-2 Receive indicator on/off

The receive indicator can be turned ON or OFF. Turn it OFF when you want to conserve battery power.

USING SET MODE

1) Push [FUNC] + [⑧SET] to enter SET mode.
2) Push [⊛▽] or [#△] one or more times until "BL" appears in the function display.
3) Rotate the main dial to select "on" or "oFF."

14-3 Beep tone on/off

The beep tone which sounds each time a switch is pushed can be turned ON or OFF, as desired.

USING SET MODE

1) Push [FUNC] + [⑧SET] to enter SET mode.
2) Push[⊛▽] or [#△] one or more times until "BE" appears in the function display.
3) Rotate the main dial to select the beep tone "on" or "oFF."

14-4 Power saver duty rate

The power saver duty cycle can be set to 1:4, 1:16 or OFF. Setting it to 1:16 conserves the most power.

USING SET MODE

1) Push [FUNC] + [⑧SET] to enter SET mode.
2) Push [⊛▽] or [#△] one or more times until "PD" appears in the function display.
3) Rotate the main dial to select the desired duty rate or to turn the power saver function OFF.
   • 1:4 – Standby: 125 msec. Circuit off 500 msec.
   • 1:16 – Standby: 125 msec. Circuit off approx. 2 sec.

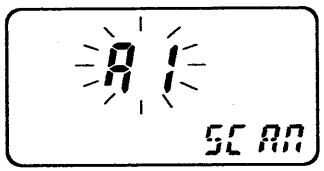
15-1 Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
• No power comes on.	• The batteries are exhausted. • Poor plug connections to the external DC power supply.	• Place new dry cell batteries in the battery case. • Check the connector or remove and replace the cable.	See below.*
• No sound comes from the speaker.	• [SQL] is turned too far clockwise. • An external earphone or speaker is connected. • An optional pager or code squelch is activated.	• Rotate the [SQL] control counterclockwise. • Unplug the speaker or earphone. • While pushing [FUNC], push [②PGR/C-SQL] several times to turn the function OFF.	p. 14 — pgs. 37~39
• Transmitting is impossible.	• The batteries are exhausted. • The PTT lock function is activated.	• Place new dry cell batteries in the battery case. • Turn OFF the PTT lock function using SET mode.	p. 2 p. 15
• Frequency cannot be set.	• The lock function is activated. • MEMORY mode or call channel is selected.	• While pushing [FUNC], push [Ⓓ LOCK] to turn OFF the lock function. • Push [Ⓐ CLR] once or twice to select VFO mode.	p. 12 p. 11
• Scan cannot be activated.	• The call channel is selected. • Priority watch is activated. • The squelch is open.	• Push [ⒹCALL] to exit the call channel. • Push [ⒶCLR] to deactivate the priority watch. • Rotate the [SQL] control clockwise.	p. 20 p. 26 p. 14
• The contents of the memories are erased.	• The backup battery needs charging because the batteries in the battery case are exhausted.	• Place new dry cell batteries in the battery case. (The backup battery will charge automatically.)	p. 2
• Some functions cannot be activated.	• The channel indication mode has been selected.	• Turn power OFF. Push [Ⓐ], [Ⓑ], [Ⓒ] and [Ⓓ]; then, turn power ON to return to normal mode.	p. 28

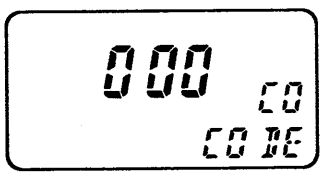
* If you have any questions, please contact your Icom Dealer.

15-2 Exiting a display

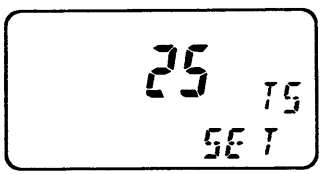
When the transceiver shows the following displays, operate as follows to exit the display, if desired.



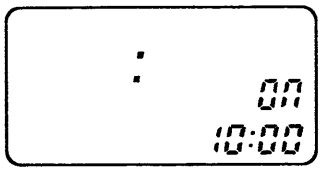
This display appears when the transceiver is in the AI selection mode. To exit the mode, push [AI]. (p. 44)



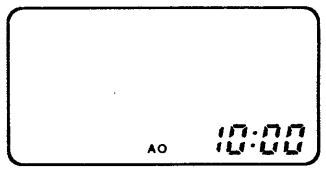
This display appears when the code channel display is selected. To exit the display, push [PTT]. (p. 36)



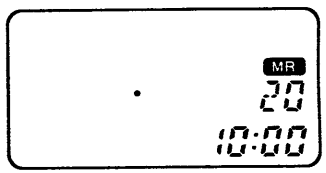
This display appears when the SET mode is selected. To exit the display, push [PTT] or [Ⓐ CLR]. (p. 4)



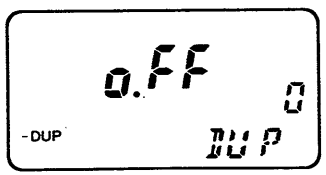
This display appears when the TIMER mode is selected. To exit the display, push [PTT]. (p. 29)



This display appears when the transceiver enters the OFF condition by the auto power-off or power-off timers. To exit the display, turn [PWR/VOL] OFF then ON again. (pgs. 30~32)



This display appears when a masked memory channel is selected. To exit the display, rotate the main dial to select an unmasked memory channel. (pgs. 17, 18)



This display appears when the transmit frequency is off-band in duplex operation. To exit the display, check and reset the operating frequency, duplex direction and offset frequency. (p. 16)

General

- Frequency coverage :

IC-P4CT-1	IC-P4CT-2	IC-P2CT-1	IC-P2CT-2
400~420 MHz	450~470 MHz	136~150 MHz	150~174 MHz

- Mode : FM
- Frequency stability (0 ℃ ~ + 50 ℃):

IC-P4CT-1	IC-P4CT-2	IC-P2CT-1	IC-P2CT-2
± 5 ppm	± 5 ppm	± 15 ppm*1	± 15 ppm*1

*1 – 10 ℃ ~ + 60 ℃

- Antenna impedance : 50 Ω (nominal)
- Usable battery pack or case : BP-110~BP-114
- External DC power supply : 6~16 V DC (negative ground)
- Current drain (at 13.8 V DC, typical):

CONDITION		IC-P4CT	IC-P2CT
Tx	High	1.8 A	1.5 A
	Low 1	950 mA	650 mA
Rx	Power saved (average)	19 mA	16 mA
	Max. audio	250 mA	250 mA

- Tuning steps : 5, 10, 12.5, 15, 20, 25, 30 and 50 kHz; and 100 kHz, 1 MHz for dial select steps.
- Usable temperature range : – 10 ℃ ~ + 60 ℃
- Dimensions (with BP-110, Projections not included) : 49(W) × 127(H) × 38.5(D) mm
- Weight (with BP-110) : 345 g (6 dry cell batteries are included. Weight varies depending on the battery type.)

Transmitter

- Output power*2 (at 13.8 V DC) : 5.0 W, 3.5 W, 1.5 W and 500 mW selectable
- Modulation system : Variable reactance frequency modulation
- Max. frequency deviation*2 : ± 5 kHz
- Spurious emissions*2 : Less than – 60 dB
- Microphone impedance : 2 kΩ

Receiver

- Receive system : Double-conversion superheterodyne
- Intermediate frequencies : 1st 30.875 MHz
  2nd 455 kHz
- Sensitivity*2 : Less than 0.16 µV for 12 dB SINAD
- Squelch sensitivity (typical) : Less than 0.1 µV at threshold
- Selectivity : More than 15 kHz/ – 6 dB
  Less than 30 kHz/ – 60 dB
- Spurious response rejection ratio*2:

IC-P4CT-1	IC-P4CT-2	IC-P2CT-1	IC-P2CT-2
More than 50 dB	More than 40 dB	More than 60 dB	More than 50 dB

- Audio output power*2 (at 13.8 V DC) : More than 200 mW at 10% distortion with an 8 Ω load.
- Audio output impedance : 8 Ω

*2 Specifications guaranteed at a transceiver temperature of 25 ℃.

All stated specifications are subject to change without notice or obligation.

Count on us!

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