



## INSTRUCTION MANUAL

# UHF CB TRANSCEIVER IC-440

Icom Inc.



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## IMPORTANT

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**READ ALL INSTRUCTIONS** carefully and completely before using the transceiver.


**SAVE THIS INSTRUCTION MANUAL** — This instruction manual contains important operating instructions for the **IC-440 UHF CB TRANSCEIVER**.

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## EXPLICIT DEFINITIONS

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WORD	DEFINITION
 <b>WARNING</b>	Personal injury, fire hazard or electric shock may occur.
<b>CAUTION</b>	Equipment damage may occur.
<b>NOTE</b>	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

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## OPERATING NOTES

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### BUSY CHANNEL


Always listen to a channel (or observe the channel busy indicator on the display) to ensure that the channel is not already in use before transmitting.

### CALLING CHANNELS (CB-11,CB-40)

In Australia channel 11 is the customary calling channel for establishing communication and channel 40 is the customary road vehicle channel.

### EMERGENCY CHANNELS (CB-05, CB-R5, CB-35)

In Australia except in an emergency, a CB transmitter must not be operated on UHF emergency channels 5 & 35.

 **NOTE:** if the Radio is switched off while on an Emergency channel, the Radio when switched on again, will be on the (software preset channel) CB-11.

### DATA CHANNELS (CB-22, CB-23)

No voice transmissions are permitted on data channels 22 and 23. (Note: Voice operation is inhibited on channels 22 and 23).

### REPEATER CHANNELS (CB-R1 to CB-R8)

UHF CB repeaters provide greater range through a base station that re-transmits the signal. Repeaters operate utilizing two channels (repeater input/ repeater output channels). It is important to avoid operation on locally used repeater input channels (which will be in the range channels 31 to 38) or locally used repeater receiving channels (which will be in the range channels 1 to 8), unless long distance communication via the repeater facility is specifically required. (Please also see: Repeater Operation, Repeater Search Scan).

### CLASS LICENCE


The citizen band radio service is licensed in Australia by The ACMA Radio-communications (Citizens Band Radio Stations) Class Licence and in New Zealand by MED General User Radio Licence for Citizens Band Radio and operation is subject to conditions contained in those licences.

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## PRECAUTIONS

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 **WARNING! NEVER** connect the transceiver to an AC outlet. This may pose a fire hazard or result in an electric shock.

 **WARNING! NEVER** operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

**NEVER** connect the transceiver to a power source of more than 27.6 V DC. This will damage the transceiver.

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

**NEVER** cut the DC power cable between the DC plug and fuse holder. If an incorrect connection is made after cutting, the transceiver may be damaged.

**NEVER** expose the transceiver and microphone to rain, snow or any liquids. The transceiver and microphone may be damaged.

**NEVER** operate or touch the transceiver and microphone with wet hands. This may result in an electric shock or damage the transceiver and microphone.

**NEVER** place the transceiver where normal operation of the vehicle may be hindered or where it could cause bodily injury.

**DO NOT** push the PTT when not actually desiring to transmit.

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

**DO NOT** operate the transceiver for extended periods without running the vehicle's engine. The transceiver's power consumption may soon exhaust the vehicle's battery.

**DO NOT** use or place the transceiver in direct sunlight or in areas with temperatures below  $-10^{\circ}\text{C}$  or above  $+60^{\circ}\text{C}$ .

**DO NOT** set the transceiver in a place without adequate ventilation. Heat dissipation may be affected, and the transceiver may be damaged.

**DO NOT** use the chemical agents such as benzine or alcohol when cleaning, as they can damage the transceiver's surfaces.

**USE** Icom microphones only (supplied or optional). Other manufacturer's microphones have different pin assignments and may damage the transceiver if attached.

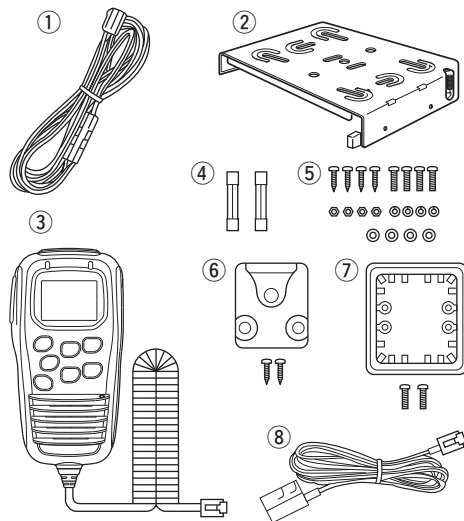
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## ■ Supplied accessories

- ① DC power cable (3 m) ..... 1
- ② Mounting bracket..... 1
- ③ Microphone (HM-182) ..... 1
- ④ Fuses (FRG 5 A) ..... 2
- ⑤ Mounting screws, nuts and washers ..... 1 set
- ⑥ Microphone hanger set ..... 1
- ⑦ Microphone hanger attachment plate ..... 1
- ⑧ Microphone cable (2.5 m) ..... 1



## ■ Installation

### ◆Location

Select a location which can support the weight of the transceiver and does not interfere with driving. We recommend the locations shown in the diagram at p. 2.

**NEVER** place the transceiver or microphone where normal operation of the vehicle may be hindered or where it could cause bodily injury.

**NEVER** place the transceiver or microphone where air bag deployment may be obstructed.

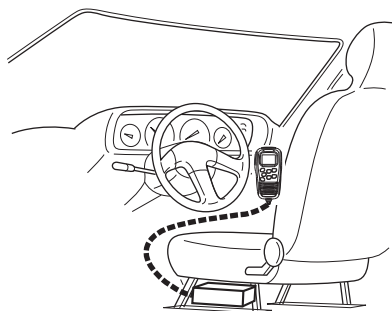
**DO NOT** place the transceiver or microphone where hot or cold air blows directly onto it.

**DO NOT** place the transceiver or microphone in direct sunlight.

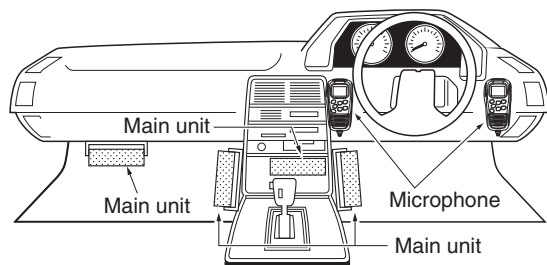
# 1 ACCESSORIES AND CONNECTION

## ◇ Installation methods

<Sample 1: IC-440 is installed under a driver's seat.>

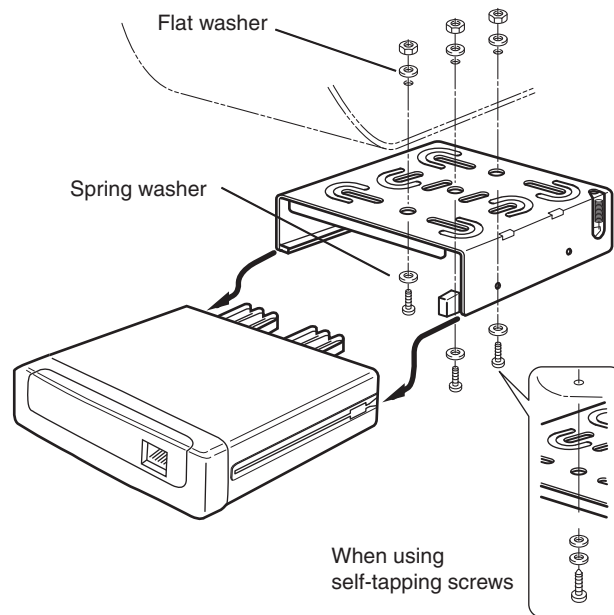


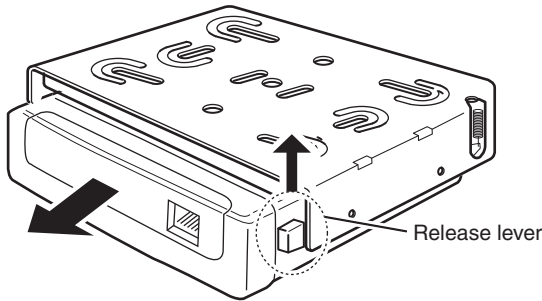
<Sample 2: IC-440 is installed under a dash box, etc.>



## ◇ Using the mounting bracket

- ① Drill 3 holes where the mounting bracket is to be installed.
  - Approx. 5.5–6 mm ( $\frac{1}{4}$ "") when using nuts; approx. 2–3 mm ( $\frac{1}{8}$ "") when using self-tapping screws.
- ② Insert the supplied screws, nuts and washers through the mounting bracket and tighten.
- ③ Insert the mounting bracket's rail to the transceiver's slot, then slide the transceiver to attach with the mounting bracket.



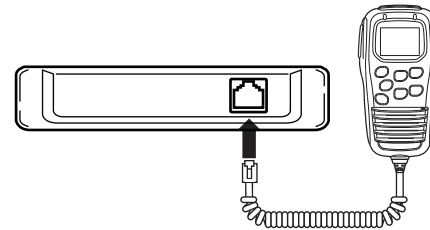


#### NOTE

- When detaching the transceiver from the mounting bracket, push up and hold the release lever, then pull the transceiver in the direction of the arrow.
- The mounting bracket can be attached even if upside down. When detaching the transceiver from the bracket in this case, push down and hold the release lever, then pull the transceiver to the front.

#### ◇ Microphone connection

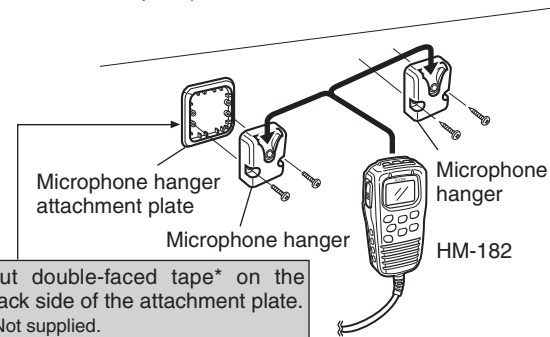
Connect the supplied microphone as illustrated below.



**CONVENIENT!** The supplied OPC-647 MICROPHONE CABLE is available to extend the microphone cable.

#### ◇ Microphone hanger attachment

Attach the supplied microphone hanger (with the microphone hanger attachment plate) as illustrated below.



# 1 ACCESSORIES AND CONNECTION

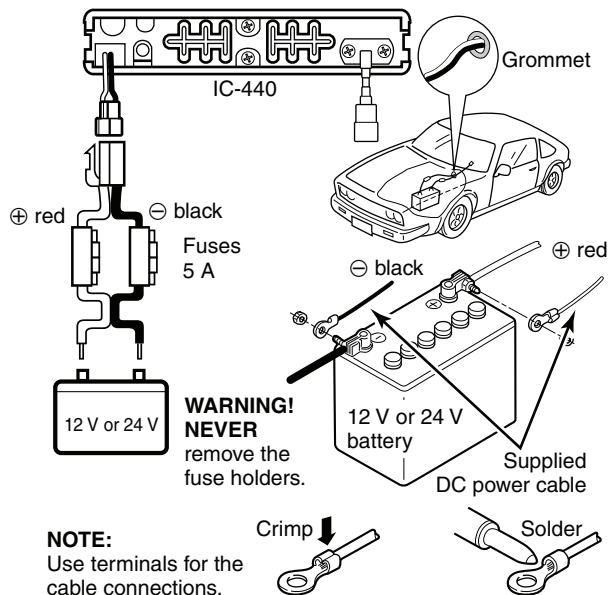
## ◇ Battery connection

⚠ **WARNING NEVER** remove the fuse holders from the DC power cable.

**DO NOT** use the cigarette lighter socket for power connection. (See p. 6 for details)

Attach a rubber grommet when passing the DC power cable through a metal plate to prevent a short circuit.

### • Connecting to a DC power source



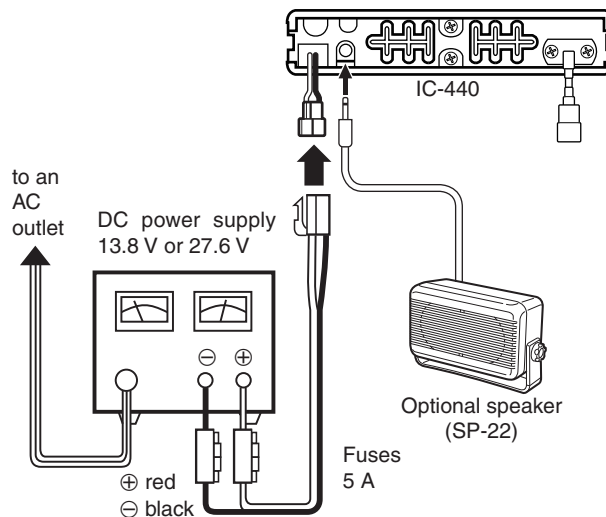
## ◇ DC power supply connection

⚠ **WARNING NEVER** remove the fuse holders from the DC power cable.

Use a 13.8 V or 27.6 V DC power supply with at least 3 A capacity.

Make sure the ground terminal of the DC power supply is grounded.

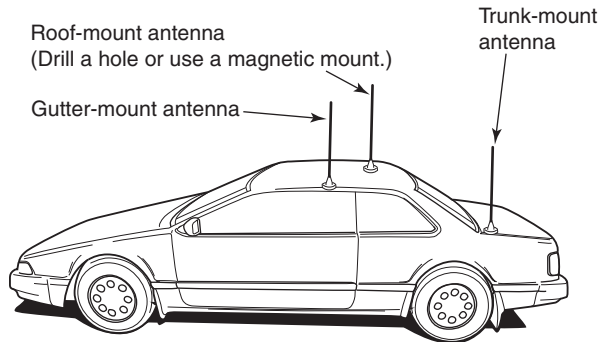
### • Connecting to a DC power supply



## ◇ Antenna installation

### • Antenna location

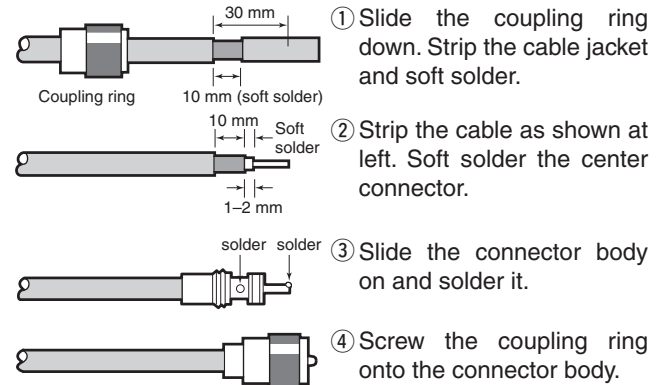
To obtain maximum performance from the transceiver, select a high-quality antenna and mount it in a good location. A non-radial antenna should be used when using a magnetic mount.



### • Antenna connector

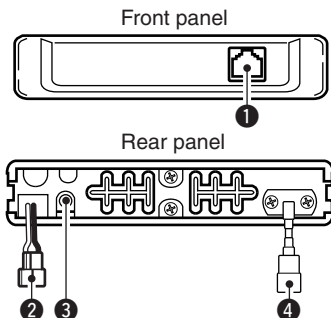
The antenna uses a PL-259 connector.

### • PL-259 CONNECTOR



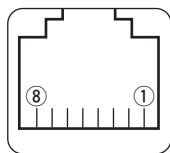
**NOTE:** There are many publications covering proper antennas and their installation. Check with your local dealer for more information and recommendations.

## ■ IC-440 front and rear panels



### ① MICROPHONE CONNECTOR

Connects the supplied microphone or cloning cable (OPC-1122U).



- ① DC output (same voltage as connected battery or DC power supply)
- ② TX line
- ③ GND
- ④ PTT
- ⑤ GND (microphone ground)
- ⑥ AF line
- ⑦ POWER
- ⑧ RX line

### ② POWER RECEPTACLE

Accepts 13.8 V or 27.6 V DC with the supplied DC power cable.

**NOTE: DO NOT** use a cigarette lighter socket as a power source when operating in a vehicle. The plug may cause voltage drops and ignition noise may be superimposed onto transmit or receive audio.

### ③ EXTERNAL SPEAKER JACK [SP]

Connects a 4  $\Omega$  speaker. (p. 4)

- Audio output power is more than 5.0 W.

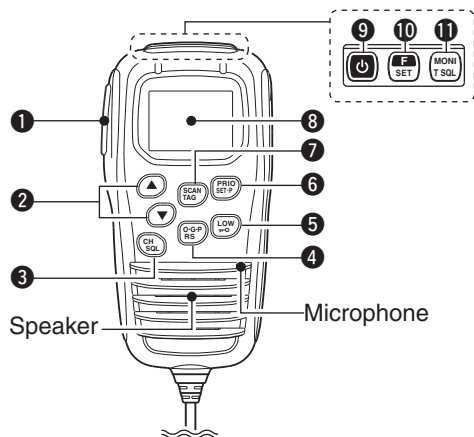
### ④ ANTENNA CONNECTOR

Connects a 50  $\Omega$  antenna with a PL-259 connector and a 50  $\Omega$  coaxial cable.

### ANTENNA INFORMATION

For radio communications, the antenna is of critical importance, to maximize your output power and receiver sensitivity. The transceiver accepts a 50  $\Omega$  antenna and less than 1:1.5 of Voltage Standing Wave Ratio (VSWR). High SWR values not only may damage the transceiver but also lead to TVI or BCI problems.

## ■ HM-182 front and top panels



**Information:** Up to four desired functions, one each for Normal and Function mode, can be re-assigned to **[F SET]**, **[MONI T SOL]**, **[SCAN TAG]**, **[O-G-P RS]**, **[PRIO SET-P]**, **[CH SOL]** and **[LOW W-O]** keys with the optional CS-440 CLONING SOFTWARE. (p. 12)

The default setting is used in this instruction manual, for description.

**[N]** : Stands for Normal mode operation.

**[F]** : Stands for Function mode operation. (Push **[F SET]** (Function) to enter Function mode.)

### ① PTT SWITCH [PTT] (p. 16)

Push and hold to transmit; release to receive.

### ② VOLUME CONTROL/CH UP/CH DOWN KEYS ([VOL])



Push to adjust the audio level, to select an operating channel, set mode setting, etc. (pgs. 14, 19, 40)  
[Volume adjust/set mode setting]

➡ Push to adjust the audio level (from 0 to 32).

- “**[X]**” appears when the audio level is set to 0 (while muted).

➡ Push to select the set mode setting in the set mode.  
[Channel selection]

Push **[CH SOL]**, then push to select the operating channel.  
(p. 14)

- “**[CH+]**” appears when channel selection mode is selected.

### ③ VOLUME/CHANNEL/SQUELCH SELECT KEY **[CH SOL]** (Volume/Channel/Squelch select mode) (pgs. 14, 18)

➡ Push to toggle between volume and channel selection mode.

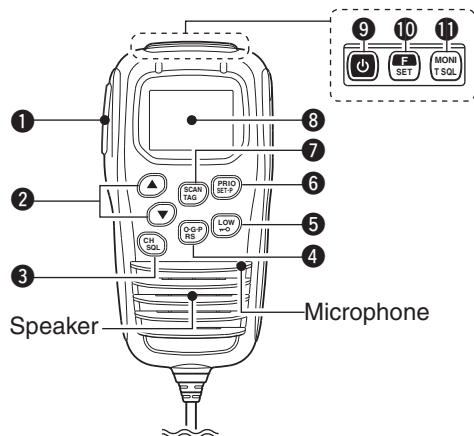
- “**[CH+]**” appears when channel selection mode is selected.
- If no key is pushed within 30 sec., channel selection mode is cancelled.

(Squelch level select mode)

➡ Push and hold for 2 sec. to enter the squelch level setting mode, then push **[▲]** or **[▼]** to set the squelch level. (p. 18)

## 2 PANEL DESCRIPTION

### ■ HM-182 front and top panels (Continued)



#### 4 O-G-P/RS KEY

 (Scan Mode/Rpt Scan)

- ➔ Push to select the scan type from open scan, group scan and priority scan in order. (pgs. 23, 24)
  - “OS” appears when the open scan is selected, “GS” appears when the group scan is selected, and “PS” appears when the priority scan is selected.
- ➔ Push and hold for 2 sec. to start the repeater scan. (p. 25)
  - Repeater output channels are between ‘CB-R1’ to ‘CB-R8’ operation only







#### (Quiet/ID-MR)


- ➔ Push to toggle the quiet function ON or OFF. (‘CB-XX’ displays when the CB channel is selected.) (p. 33)
  - “Q” appears when the quiet function is turned ON.
- ➔ Push and hold for 2 sec. to enter the received ID code history indication mode. (p. 32)
  - “NO ID” is displayed when no ID code is memorised.

#### 5 LOW/“” KEY



 (RF Power/Lock)

- ➔ Push to toggle the transmit output power level. (p. 15)
- ➔ Push and hold for 2 sec. to electronically lock all keys except the following. (p. 18)
 

[PTT],  (Monitor),  (Function),  (Call),  (Loud),  (Small) and  (Lock).

  - “” appears when the lock function is ON.
  - Push and hold for 2 sec. again to turn the lock function OFF.

#### (Dup/Zone)

- ➔ Push to toggle the selected channel between duplex or simplex operation (Depending on pre-setting).
  - Duplex operation can be selected within ‘CB-R1’ to ‘CB-R8’ only.
- ➔ Push and hold for 2 sec., then select the desired zone with  or . (p. 15)
  - Available only when more than two zones are set.



## 6 PRIO/SET•P KEY

 (PRIO/PRIO Set)

- ➔ Push to select the priority channel. (p. 17)
- ➔ Push and hold for 2 sec. to set the displayed channel as the priority channel. (p. 17)

 (S-Ring/PRIO Clear)



- ➔ Push to transmit the Smart-Ring signal. (p. 34)
  - When RX channel is selected, “N/A” appears.
- ➔ Push and hold for 2 sec. to cancel the priority channel setting. (p. 17)

## 7 SCAN/TAG KEY

 (Scan/Scan Tag)

- ➔ Push to start or stop the scan. (pgs. 23, 24)
- ➔ Push and hold for 2 sec. to set or clear the displayed channel as a TAG (scanned) channel. (p. 22)
  - “TAG” appears when the selected channel is tagged.

 (TX Code CH/Call)

- ➔ Push to enter the SelCall TX code channel selection mode, then push  or  to select. (CB channel operation only) (p. 29)
- ➔ Push and hold for 2 sec. to transmit to the SelCall TX code channel. (CB channel operation only) (p. 31)


## 8 FUNCTION DISPLAY (p. 10)

Displays a variety of information such as an operating channel number/name, SelCall code, selected function, etc.

## 9 POWER KEY (p. 14)

Push and hold for 2 sec. to turn the power ON and OFF.


## 10 FUNCTION/SET KEY

 (Function/Set Mode)

- ➔ Push to turn Function mode ON.
  - “F” appears when Function mode is turned ON.
- ➔ Push and hold for 2 sec. to enter Set mode. (pgs. 19, 40)



 (Function/RX VFO)

- ➔ Push to turn the Function mode OFF.
  - “F” disappears when Function mode is turned OFF.
- ➔ Push and hold for 2 sec. to enter RX VFO mode. (‘RX-XX’ displays while RX channel is selected) (p. 35)



 **NOTE:** Returns to the Normal mode automatically after 30 sec. when no key operation is performed in Function or Set mode.

## 11 MONI/T SQL KEY

 (Monitor/TSQ)

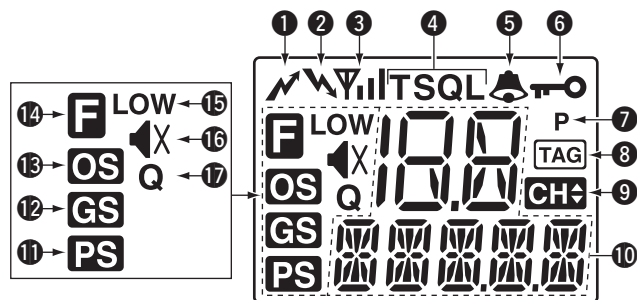
- ➔ Push to toggle the monitor function ON or OFF. (p. 18)
- ➔ Push and hold for 2 sec. to activate the following functions in order.
  - Subaudible tone encoder and Tone squelch/DTCS squelch (“TSQ” appears). (p. 27)
  - Pocket beep (“TSQ ” appears). (p. 28)
  - No tone operation (“TSQ ” disappears).

 (SQL/ATS)

- ➔ Push to enter the squelch level setting mode, then push  or  to set the squelch level. (p. 18)
- ➔ Push and hold for 2 sec. to turn the ATS (automatic transponder system) function ON or OFF. (p. 34)

## 2 PANEL DESCRIPTION

### ■ Function display



#### 1 TRANSMIT INDICATOR

Appears while transmitting.

#### 2 BUSY INDICATOR

Appears while the channel is busy.

#### 3 SIGNAL STRENGTH INDICATOR

Indicates relative signal strength level.

- “Ψ” blinks when the ATS function is in use. (p. 34)

#### 4 TONE INDICATORS (p. 27)

- ➔ “T” appears while the Subaudible tone encoder is in use.
- ➔ “T SQL” appears while the Tone squelch/DTCS squelch function is in use.

#### 5 BELL INDICATOR

- ➔ Appears when the pocket beep function is in use. (p. 28)
- ➔ Blinks when the specified SelCall or Smart Ring call is received. (pgs. 32, 34)

#### 6 KEY LOCK INDICATOR (p. 18)

Appears when the key lock function is selected.

#### 7 PRIORITY CHANNEL INDICATOR (p. 24)

Appears when the priority channel is set.

#### 8 TAG CHANNEL INDICATOR (p. 22)

Appears when the tag channel is selected.

#### 9 CHANNEL INDICATOR (p. 14)

Appears when channel selection mode is set.

#### 10 ALPHANUMERIC DISPLAY

The operating channel number, channel name, Set mode contents etc. is displayed.

#### 11 PRIORITY SCAN INDICATOR (p. 24)

Appears when the ‘Priority scan’ is selected.

#### 12 GROUP SCAN INDICATOR (p. 24)

Appears when the ‘Group scan’ is selected.

#### 13 OPEN SCAN INDICATOR (p. 23)

Appears when the ‘Open scan’ is selected.

#### 14 FUNCTION INDICATOR

- Appears when the Function mode is ON.
- A secondary function of the key can be access.

#### 15 LOW POWER INDICATOR (p. 15)

Appears when low output power is selected.

**16 INTERNAL SPEAKER MUTE INDICATOR** (p. 14)

Appears\* when the volume level is set to 0 (the audio is muted).

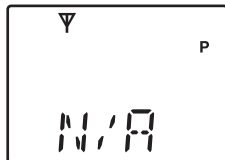
\*Depending on pre-setting.

**17 QUIET INDICATOR** (p. 33)

Appears when the Quiet function is ON (SelCall mute is activated).








**Information:**


"N/A" appears when the pushed key is not available.



## 2 PANEL DESCRIPTION

### ■ Programmable function keys

The following functions can be assigned to , , , , , , and  programmable function keys with the optional CS-440 CLONING SOFTWARE.

The key function activates after pushing  when the programmable function key is assigned to the function mode operation.

If the programmable function names are bracketed in the following explanations, the specific key is used to activate the function depends on the programming.

#### **Scan/Scan Tag**

- ➡ Push to start/stop the scan.
- ➡ Push and hold for 2 sec. to set or clear the displayed channel as a TAG channel.

#### **Scan Mode/Rpt Scan**

- ➡ Push to select the scan mode.
- ➡ Push and hold for 2 sec. to start repeater scan.

#### **PRIO/PRIO Set**

- ➡ Push to select the priority channel.
- ➡ Push and hold for 2 sec. to set the displayed channel as the priority channel.

#### **S-Ring/PRIO Clear**

- ➡ Push to transmit the Smart-Ring call.
  - When RX channel is selected, “N/A” appears.
- ➡ Push and hold for 2 sec. to cancel the priority channel setting.

#### **Monitor/TSQL**



(This key function can be assigned in the Normal mode only.)

- ➡ Push to toggle the monitor function ON or OFF.
- ➡ Push and hold for 2 sec. to activate the following functions in order.
  - Subaudible tone encoder and Tone squelch/DTCS squelch
  - Pocket beep
  - No tone operation.

#### **RF Power/Lock**

- ➡ Push to toggle the transmit output power level.
- ➡ Push and hold for 2 sec. to toggle key lock function ON and OFF.



#### **TX Code CH/Call**

- ➡ Push to enter the TX code channel selection mode, then push  or  to select the desired channel (CB channel operation only).
- ➡ Push and hold for 2 sec. to transmit the specified SelCall TX code on the selected channel (CB channel operation only).



### **Quiet/ID-MR**

- Push to select function ON or OFF (CB channel operation only).
- Push and hold for 2 sec. to enter the received ID code history indication mode.




### **SQL/ATS**

- Push to enter the squelch level setting mode, then push  or  to set the squelch level.
- Push and hold for 2 sec. to turn the ATS (Automatic Transponder System) function ON and OFF.


### **Dup/Zone**

- Push to set the selected channel as Duplex or Simplex operation (Depending on pre-setting).
  - Duplex channel can be selected in 'CB-R1' to 'CB-R8' only.
- Push and hold this key for 2 sec. then push  or  to select the desired zone. (Available only when more than two zones are set.)

### **Function/Set Mode**






- (This key function can be assigned to the  key only.)
- Push to turn Function mode ON or OFF.
  - Push and hold for 2 sec. to the Set mode ON or OFF.
    - After entering the Set mode, push this key momentarily to select the item, and push  or  to change the setting.

### **Function/RX VFO**


- (This key function can be assigned to the  key only.)
- Push to turn Function mode ON or OFF.
  - Push and hold for 2 sec. to enter the RX VFO mode.
 

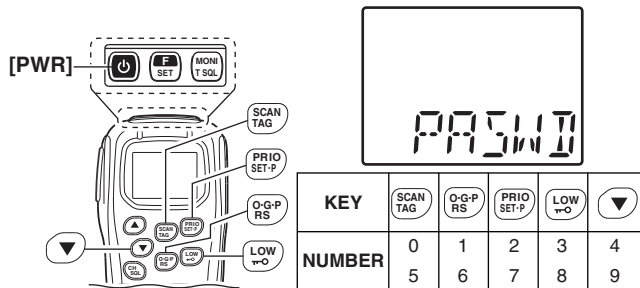
In RX VFO mode, the operating frequency and the channel spacing setting can be changed.

### **SQL/Set Mode**

- (This key function can be assigned to the  key only.)
- Push to enter the squelch level setting mode, then push  or  to set the squelch level.
  - Push and hold for 2 sec. to the Set mode ON or OFF.
    - After entering the Set mode, push this key momentarily to select the item, and push  or  to change the setting.

## ■ Turning power ON

- ① Push and hold  for 2 sec. to turn the power ON.
- ② If the transceiver is programmed for a start up password, input the digit codes as directed by your dealer.
  - The keys in the table below can be used for password input:
  - The transceiver detects numbers in the same block, as identical. Therefore “01234” and “56789” are the same.

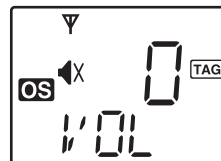


- ③ When the “PASWD” indication does not clear after inputting 4 digits, the input code number may be incorrect. Turn the power off and start over in this case.




## ■ Volume selection



➔ Push  or  to select the desired volume level.

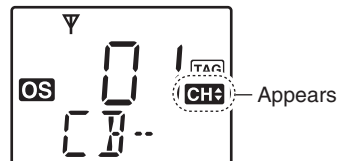
- “X” appears when volume level 0 is selected (while the internal speaker is muted).



## ■ Channel selection

➔ Push  to enter the channel selection mode, then push  or  to select the desired channel.

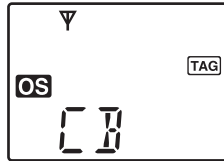
- While pushing and holding  or , the displayed channel changes continuously until channel 1 is selected.
- When channel 1 is selected, beeps are emitted.
- ‘CB-XX’ appears when the CB channel is selected and ‘RX-XX’ appears when the RX channel is selected.
- “CH+” appears when channel selection mode is selected.



### ◇ Zone type selection

(Available only when more than two zones are set.)

- ① Push **[F SET]** (Function) to enter the function mode, and push and hold **[LOW WO]** (Zone) for 2 sec. to enter the zone select mode.



- ② Push **[▲]** or **[▼]** to select the desired zone, then push **[LOW WO]** (Zone) again to set.

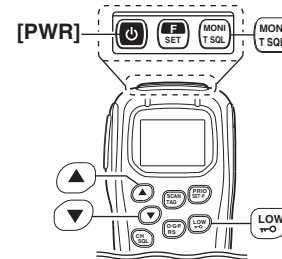
#### NOTE:

'CB-05,' 'CB-R5' and 'CB-35' channels are used for the emergency. And 'CB-22' and 'CB-23' channels are used for telemetry and telecommand applications, so voice communications are not available on these channels.

## ■ Receiving and transmitting

### Receiving:

- ① Push and hold **[POWER]** for 2 sec. to turn the power ON.
  - If "T SQL" appears on the display, push and hold **[MONI T SQL]** for 2 sec. once or twice to cancel the tone squelch or pocket beep. (pgs. 27, 28)
- ② Select the desired operating channel (p. 14).
  - When receiving a signal, "V" appears and audio is emitted from the speaker.
  - Further adjustment of volume level may be necessary at this point. (p. 7)
  - Push **[MONI T SQL]** to toggle the monitor function ON and OFF.



### 3 BASIC OPERATION

#### ■ Receiving and transmitting (Continued)

##### **Transmitting:**

Wait for the channel to become clear to avoid interference.

- ① While pushing and holding **[PTT]**, speak into the microphone at a normal voice level.
  - “**N**” appears.
  - A PTT hold function is available. See p. 38 for details.
- ② Release **[PTT]** to return to receive.
- ③ Push **[LOW PWR]** (RF Power) to select the output power if necessary.
  - “**LOW**” appears when low power is selected.



**IMPORTANT:** To maximize the readability of your signal;

1. Pause briefly after pushing **[PTT]**.
2. Hold the microphone 5 to 10 cm from your lips, then speak into the microphone at a normal voice level.

#### ◇ Transmitting notes

##### • Transmit inhibit function

The transceiver has several inhibit functions which restrict transmission under the following conditions:

- The channel is busy or un-matched CTCSS/DTCS is received. (Depending on the transmission lockout function setting.)
- The selected channel is a 'receive only' channel.

##### • Time-out timer

After continuous transmission for the pre-programmed time period, the time-out timer is activated, causing the transceiver to stop transmitting.

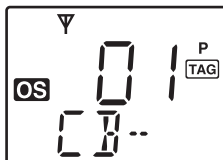


## ■ Priority channel setting

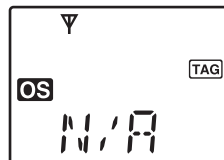
The priority channel, simply recalled by pushing **(PRIO SET-P)** (PRIO), and also is automatically monitored during the priority scan. You can set the only one channel as the priority channel. "P" appears when the priority channel is set.

### ◇ The priority channel selection

- ➡ Push **(PRIO SET-P)** (PRIO) to select the priority channel.
  - "N/A" appears when the priority channel is not set.



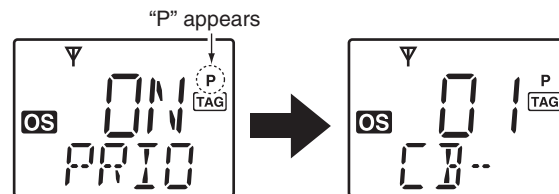
The priority channel is selected.



When the priority channel is not set.

### ◇ Set the priority channel

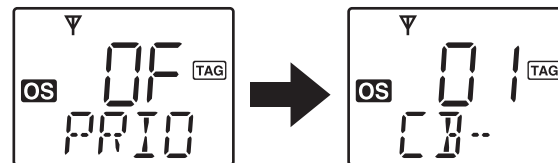
- ① Select the desired channel. (p. 14)
- ② Push and hold **(PRIO SET-P)** (PRIO Set) for 2 sec. to set the displayed channel as the priority channel.
  - "P" appears.



The selected channel is set to the priority channel.

### ◇ Cancel the priority channel setting

- ➡ Push **(SET)** (Function) to enter the function mode, then push and hold **(PRIO SET-P)** (PRIO Clear) for 2 sec. to cancel the priority channel setting.
  - "P" disappears.



The priority channel is cancelled.

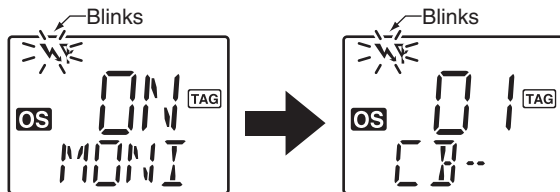
### 3 BASIC OPERATION

#### ■ Monitor function

This function is used to listen to weak signal or to open the tone squelch manually.

- ➡ Push **(MONI TSQL)** (Monitor) to toggle the monitor function ON and OFF.

- “” blinks when the monitor function is in use.

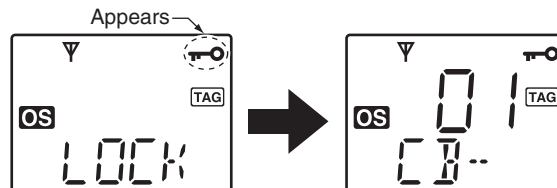


#### ■ Lock function

This function electronically locks all keys except for **[PTT]**, **(MONI TSQL)** (Monitor), **(F SET)** (Function), **(SCAN TAG)** (Call), **(▲)** (Loud), **(▼)** (Small) and **(LOW W/O)** (Lock) to prevent accidental channel changes and function access.

- ➡ Push and hold **(LOW W/O)** (Lock) for 2 sec. to toggle the lock function ON and OFF.

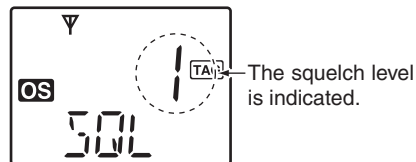
- “” appears when the lock function is in use.



#### ■ Adjusting the squelch level






In order to receive signals properly, the squelch must be adjusted to the proper level.

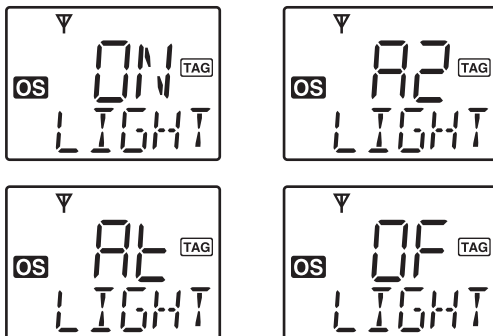
- ① Push and hold **(CH SQL)** (SQL) for 2 sec. to enter the squelch level setting mode.
  - ➡ Push **(F SET)**, then push and hold **(CH SQL)** (SQL) also available to enter the squelch level setting mode.
- ② Push **(▲)** or **(▼)** to adjust the squelch level within 0 to 9 ranges.
- ③ Push **(CH SQL)** (SQL) to exit the squelch level setting mode.





## ■ Display backlighting USING SET MODE

The transceiver has display backlight for night-time operation.

- ① Push and hold  (Set Mode) for 2 sec. to enter set mode.
- ② Push \* or \* several times until “**LIGHT**” appears.
- ③ Push  or  to select the display backlight condition.
  - **ON**: Backlight lights continuously.
  - **A2**: Lights for 5 sec. when any key except [PTT] is pushed, or the LCD indication is changed.
  - **At**: Lights for 5 sec. when any key except [PTT] is pushed or the Selcall signal is transmitted/received.
  - **OF**: Backlight never lights.













- ④ Push and hold  for 2 sec. to turn the power OFF, or push and hold  (Set Mode) for 2 sec. to exit set mode.


\*Regardless of the assigned key function.

## ■ Set mode

All set mode items are available at power ON and allows you to set seldom-changed settings. In this case you can “customize” the transceiver operation to suit your preferences and operating style. See p. 40 for set mode items detail.

### Entering the set mode:

- ① While pushing and holding  and , push and hold  for 2 sec. to turn the power ON. Then, push and hold  (Set Mode) for 2 sec. to enter the all set mode.
- ② Push \* or \* several times to select the appropriate item.  
Then push  or  to set the desired level/condition.
  - Available all set mode functions are **SQL Level**, **CTCSS tone/ DTCSS code**, **Auto Power OFF**, **Backlight**, **Brightness**, **Contrast**, **Beep**, **Beep Level**, **Mic Gain**, **Signal Message**, **Time-Out Timer (TOT)**, **Lock-Out**, **Scan Stop Timer**, **Scan Restart**, **Roger Beep**, **PTT Hold**, **Speaker** and **Own ID**.
- ③ Push and hold  for 2 sec. to turn the power OFF, or push and hold  (Set Mode) for 2 sec. to exit set mode.

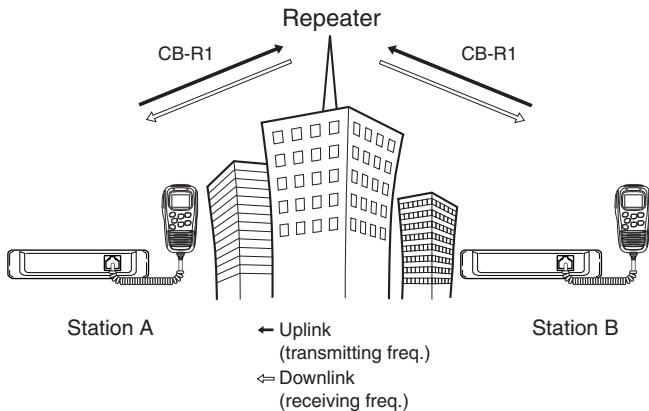
**NOTE:** Set mode can be accessed via the  (Set Mode) key operation only (p. 40). In this case, set mode allows quicker item selection. Only the default “Enable” items are selectable when Set mode is activated in the way. The CS-440 CLONING SOFTWARE allows these to be modified.

\*Regardless of the assigned key function.

## ■ Repeater operation

Repeaters allow you to extend the operational range of your radio.

Normally, a repeater has independent frequencies for receive and transmit.

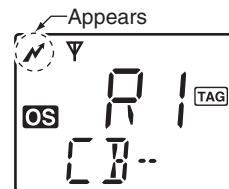


## ■ Accessing a repeater

A repeater amplifies received signals and re-transmits them on a different frequency, allowing you to communicate over greater distances with improved reliability. When using a repeater, the repeater output channel ('CB-R1' to 'CB-R8') must be selected.

You can search the accessible repeater in your local area using the Repeater search scan function. (p. 25)

- ① Select the desired repeater output channel ('CB-R1' to 'CB-R8'). (p. 14)
- ② While pushing and holding **[PTT]**, speak into the microphone at your normal voice level.
  - "N" appears.



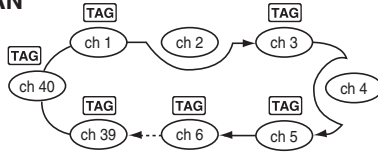
- ③ Release **[PTT]** to receive.

**NOTE:** Excludes Emergency Repeater 'CB-R5.'

## ■ Scan types

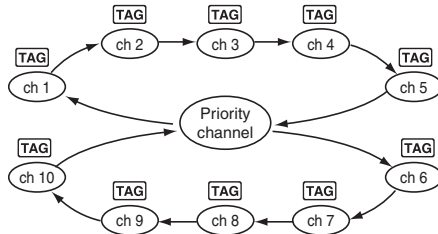
The transceiver has 4 scan types, tag function and 4 resume conditions providing scanning versatility.

### OPEN SCAN



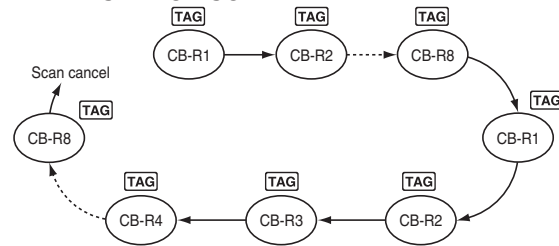
Repeatedly scans all tag channels in sequence.

### GROUP OR PRIORITY SCAN



Repeatedly watches a designated priority channel after scanning 5 tagged channels.

### REPEATER SEARCH SCAN



Scans all repeater channels ('CB-R1' to 'CB-R8')\* in sequence. If there are no busy channels after scanning channels 'CB-R1' to 'CB-R8',\* it begins scanning from 'CB-R1' again, then the transceiver transmits a signal to search for a repeater while scanning.

\* Excludes Emergency Repeater 'CB-R5.'

## 5 SCAN OPERATION

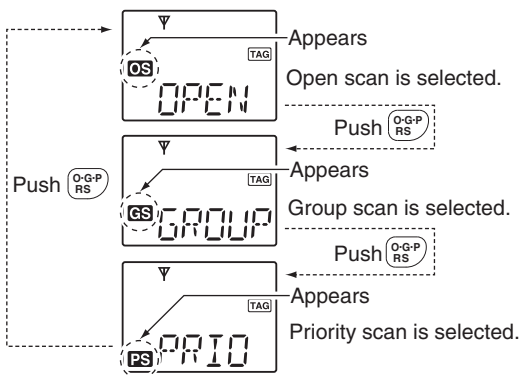
### ■ Scanning preparation

IC-440 scans all tagged channels, when a scan is initiated. When the IC-440 finds a busy channel it can be set to pause or resume after a pause (Scan Stop Timer). (Excluding repeater search scan).

(See Scan Stop Timer in Set mode. The default setting is P5).

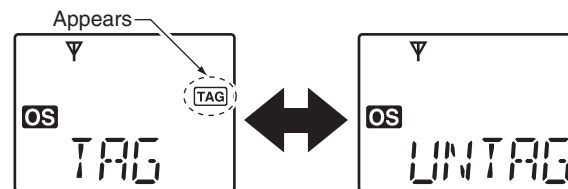
#### ◇ Scan type selection

- ➡ Push **O-G-P RS** (Scan Mode) several times to select the desired scan type.
  - Open, group and priority scans are available.
  - “OS”, “GS” or “PS” is displayed for 0.5 sec. when each scan type is selected.



#### ◇ Tag channel setting

- ① Select the desired scan type. (See at left.)
- ② Select the desired channel. (p. 14)
- ③ Push and hold **SCAN TAG** (Scan Tag) for 2 sec. to toggle the tag channel setting ON and OFF.
  - “TAG” appears when the tag setting is ON (The channel is set as a scan channel).



#### To speed up scanning:






For open scan, cancel the tag channel setting to skip undesired channels such as usually busy channels.

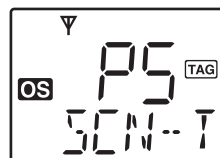
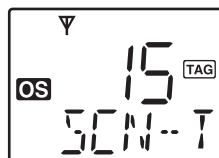
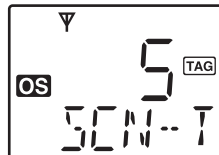
For group scan, set only often-used channels as tag channels.



All memory channels may be set as tag channels by default.

# ◇ Setting scan resume condition

USING SET MODE

- ① Push and hold  (Set Mode) for 2 sec. to enter set mode.
- ② Push \* or \* several times until “SCN-T” appears.
- ③ Push  or  to select the scan resume timer.
  - **5** : Scan pauses for 5 sec. then resumes.
  - **10** : Scan pauses for 10 sec. then resumes.
  - **15** : Scan pauses for 15 sec. then resumes.
  - **P5** : Scan pauses until the signal disappears, then resumes 5 sec. after the signal disappears. (P5 is recommended for typical use and is the default setting).



- ④ Push and hold  for 2 sec. to turn the power OFF, or push and hold  (Set Mode) for 2 sec. to exit set mode.


\*Regardless of the assigned key function.

# ■ Open scan

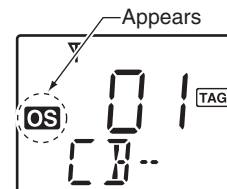
Open scan searches for transmitted signals automatically and makes it easier to locate new stations for contact or listening purposes.

## IMPORTANT!

Open scan can transmit on a start channel or busy channel.

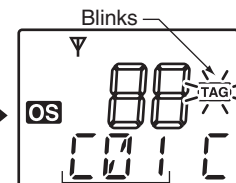
- ① Push  (Scan Mode) several times to select the open scan. (p. 22)

- “OS” appears.




Open scan is selected.

- ② Push  (Scan) to start the open scan.



Scan start channel

- ③ When receiving a signal, scan pauses and resumes according to the selected scan resume condition. (see left column)
- ④ Push  (Scan) to cancel the scan.

## 5 SCAN OPERATION

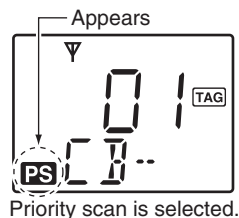
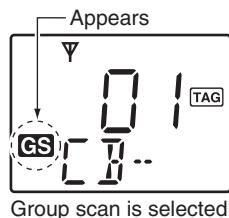
### ■ Group and priority scans

Group and priority scans repeatedly watch a priority channel while scanning specified channels. This is useful when waiting for a call on the priority channel or several specified channels.

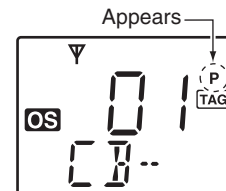
Group and priority scans behave differently when transmitting. Group scan can transmit on a priority channel or busy channel, and priority scan can only transmit on a priority channel.

- ① Push **Q-G-P RS** (Scan Mode) several times to select the group or priority scan. (p. 22)

- “GS” appears when the group scan is selected, and “PS” appears when the priority scan is selected.

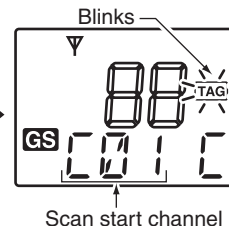
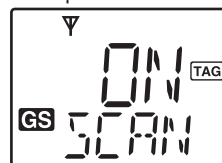


- ② Set the priority channel if desired when the priority scan type is selected in step ①. (p. 17)
  - When the priority channel is not set, scan start channel is monitored during the priority scan.

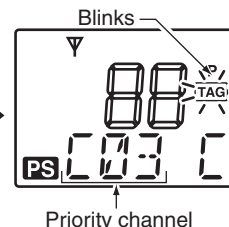


- ③ Push **SCAN TAG** (Scan) to start the scan.

Group scan starts.



Priority scan starts.



- ④ When receiving a signal, the scan pauses and resumes according to the selected scan resume condition. (p. 23)
- ⑤ Push **SCAN TAG** (Scan) to cancel the scan.



## ■ Repeater search scan

The repeater search scan not only searches for a signal on the repeater channels, but also access a repeater by transmitting automatically in sequence.

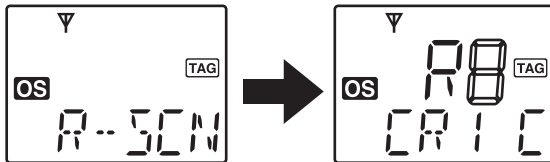
Thus the repeater search scan function searches for available repeater in the area even if the repeater is not currently in use.

▨ The repeater search scan detects a signal on the repeater output channels (CB-R1 to CB-R8)\* only. Therefore, repeater availability cannot be guaranteed even the repeater scan is stopped, because the scan will stop if any activity is detected. (The scan is cancelled when receiving a signal, such as stations communicating in simplex operation on a repeater output channel.)

\*Excludes Emergency Repeater 'CB-R5.'

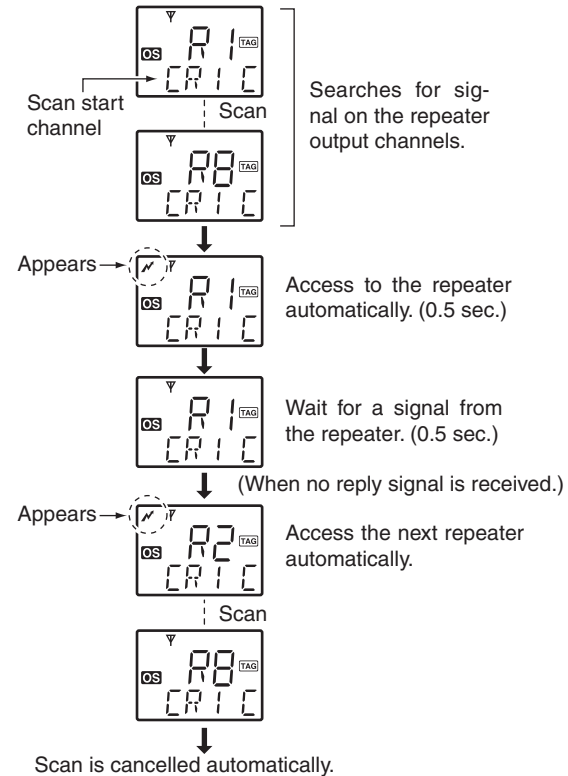
- ① Select the desired repeater output channel ('CB-R1' to 'CB-R8'), and push and hold (G-G-P RS) (Rpt Scan) for 2 sec. to start the repeater search scan.

- See the flow as described at right for repeater search scan details.



- ② When receiving a signal on the repeater channel, scan stops.
  - During second cycle scanning, 3 high beeps sound when receiving a signal, and 3 low beeps sound when no signal is received.
- ③ Push (G-G-P RS) (Scan Mode) to cancel the scan manually.
  - During transmitting, the repeater scan cannot be cancelled.

## ◇ Repeater search scan flow



**NOTE:** Excludes Emergency Repeater 'CB-R5.'

## ■ Tone squelch operation

The transceiver is equipped with 51 CTCSS tone frequencies, 104 DTCS codes. CTCSS/DTCS operation provides communication with silent standby since you will only receive calls from group members using the same CTCSS tone frequency/DTCS code.

**NOTE:** Channels 5 and 35 are used for the emergency channels, and CTCSS/DTCS operation is not available on these channels.

### ◇ Setting CTCSS tone frequency/DTCS code

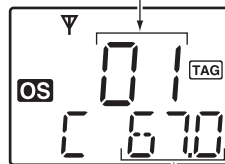
USING SET MODE

- ① Select the desired channel except for channels 5 and 35. (p. 14)
- ② Push and hold **[F SET]** (Set Mode) for 2 sec. to enter set mode.
- ③ Push **[F SET]**\* or **[MONI T SQL]**\* several times until “C” appears.
- ④ Push **[SCAN TAG]**\* to toggle the CTCSS tone frequency/DTCS code setting mode.
- ⑤ Push **[▲]** or **[▼]** to set the desired CTCSS tone frequency/DTCS code.
- ⑥ Push and hold **[POWER]** for 2 sec. to turn the power OFF, or push and hold **[F SET]** (Set Mode) for 2 sec. to exit set mode.

\*Regardless of the assigned key function.

#### • CTCSS tone setting mode

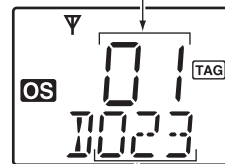
List number (grey line)



CTCSS tone frequency

#### • DTCS code setting mode

List number (grey line)



DTCS code

#### • Available CTCSS tone frequency list

(Hz)

No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.
01	67.0	12	94.8	23	136.5	34	177.3	45	218.1
02	69.3	13	97.4	24	141.3	35	179.9	46	225.7
03	71.0	14	100.0	25	146.2	36	183.5	47	229.1
04	71.9	15	103.5	26	151.4	37	186.2	48	233.6
05	74.4	16	107.2	27	156.7	38	189.9	49	241.8
06	77.0	17	110.9	28	159.8	39	192.8	50	250.3
07	79.7	18	114.8	29	162.2	40	196.6	51	254.1
08	82.5	19	118.8	30	165.5	41	199.5		
09	85.4	20	123.0	31	167.9	42	203.5		
10	88.5	21	127.3	32	171.3	43	206.5		
11	91.5	22	131.8	33	173.8	44	210.7		

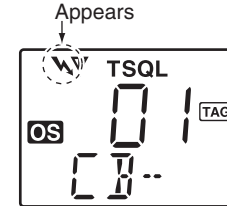
**NOTE:** The transceiver has 51 tone frequencies and consequently their spacing is narrow compared with units having 38 tones. Therefore, some tone frequencies may receive interference from adjacent tone frequencies.

• Available DTCS code list

No.	Code	No.	Code	No.	Code	No.	Code	No.	Code
01	023	22	131	43	251	64	371	85	532
02	025	23	132	44	252	65	411	86	546
03	026	24	134	45	255	66	412	87	565
04	031	25	143	46	261	67	413	88	606
05	032	26	145	47	263	68	423	89	612
06	036	27	152	48	265	69	431	90	624
07	043	28	155	49	266	70	432	91	627
08	047	29	156	50	271	71	445	92	631
09	051	30	162	51	274	72	446	93	632
10	053	31	165	52	306	73	452	94	654
11	054	32	172	53	311	74	454	95	662
12	065	33	174	54	315	75	455	96	664
13	071	34	205	55	325	76	462	97	703
14	072	35	212	56	331	77	464	98	712
15	073	36	223	57	332	78	465	99	723
16	074	37	225	58	343	79	466	100	731
17	114	38	226	59	346	80	503	101	732
18	115	39	243	60	351	81	506	102	734
19	116	40	244	61	356	82	516	103	743
20	122	41	245	62	364	83	523	104	754
21	125	42	246	63	365	84	526		

◇ Turning ON the tone squelch operation

- ① Select the desired channel except for channels 5 and 35.  
(p. 14)
- ② Set the desired CTCSS tone frequency/DTCS code in set mode. (See at left page)
- ③ Push and hold **(MONI T SQL)** (TSQL) for 2 sec. several times until “**TSQL**” appears.
- ④ When the received signal includes a matching tone or code, squelch opens and the signal can be heard.
  - When the received signal is not matched, tone squelch does not open, however, “**W**” appears.
  - To open the squelch manually, push **(MONI T SQL)**.



- ⑤ Operate the transceiver in the normal way.
- ⑥ To cancel the tone squelch operation, push and hold **(MONI T SQL)** (TSQL) for 2 sec. several times until “**TSQL**” disappears.

**NOTE:** CTCSS tone frequency/DTCS code and tone squelch ON/OFF settings are automatically stored in memory channels for easy recall.

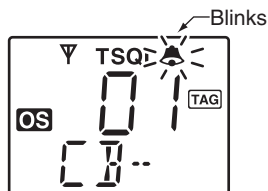
## 6 TONE SQUELCH OPERATION

### ■ Pocket beep operation

This function uses CTCSS (subaudible) tones and DTCS code for calling and can be used as a “common pager” to inform you that someone has called while you were away from the transceiver.

#### ◇ Waiting for a call from a specific station

- ① Select the desired channel except for channels 5 and 35.  
(p. 14)
- ② Set the desired CTCSS tone/DTCS code in set mode.  
(pgs. 26, 41)
- ③ Push and hold MONI  
TSQL (TSQL) for 2 sec. several times until “**TSQL** 📢” appears to activate the pocket beep.
- ④ When the received signal includes a matching tone or code, the transceiver emits beep tones every 10 sec. and “📢” blinks.



- ⑤ Push **[PTT]** to answer and to stop blinking.
  - Tone squelch is automatically selected.

## ■ General


In addition to the tone squelch operation for silent stand-by, the SelCall operation is available. SelCall is an abbreviation for “Selective Calling.” In tone squelch operation, there are 155 ways to make an individual call with CTCSS tone frequencies/DTCS codes versus 100,000 ways to make an individual call with SelCall using 5-tone.

SelCall allows you to selectively call another unit that is operating on the same channel.

SelCall can also call the entire group on that channel using tone squelch code.




The caller station code/name, Answer Back function, etc. are available with SelCall operation. A variety of functions are available depending on the setting with the CS-440 CLONING SOFTWARE. See the help file for setting details.


### NOTE:



- Channels 5 and 35 are used for the emergency channels, and SelCall operation is not available on these channels.
- SelCall transmission is restricted for total of 3 sec. in a minute. If your try to transmit over 3 sec., “N/A” appears (when  (Call) is pushed,) or error beep is emitted (when **[PTT]** is pushed.)

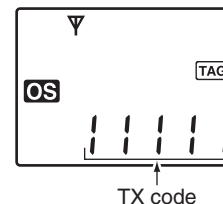
## ■ Calling operation

### ◇ TX code channel selection



 (TX Code CH) enables you to change the TX code channel with  or .

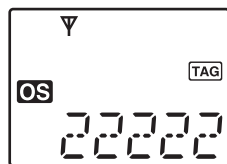
 **TX code** means the Transmitting SelCall code. Max. 32 TX code channels can be pre-programmed into the transceiver using the optional CS-440 CLONING SOFTWARE.


- ① Select the desired CB channel (‘CB-XX’) except for channels 5 and 35. (p. 14)
- ② Push  (Function) to enter the function mode, then push  (TX Code CH) to enter the TX code channel selection mode.
  - The channel name is displayed instead of the TX code, if the channel name is programmed.

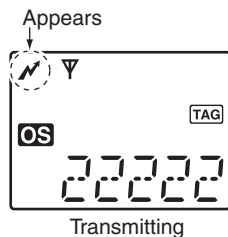


## 7 SELCALL OPERATION

- ③ Push  or  to select the desired TX code channel.




- ④ Push **[PTT]** to transmit to the selected TX code channel, or push  (TX Code CH) to set the selected TX code channel and repeat ①–③, then push **[PTT]** to transmit.








### ✓ CONVENIENT!

The TX code channel name can be assigned to the all 32 TX code channel via the optional CS-440 CLONING SOFTWARE. The TX code channel name allows you to easy to select the channel, find the channel user, and so on.

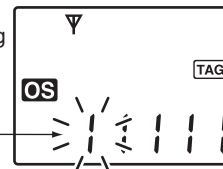
### ◇ TX code number edit


 (TX Code CH) enables you to change the TX code contents within the allowable digits.

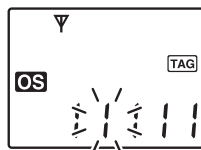
The group call function works by allowing you to edit a special 'group code' of the SelCall ID code.

- ① Select the desired CB channel ('CB-XX') except for channels 5 and 35. (p. 14)
- ② Push  (Function) to enter the function mode, then push  (TX Code CH) to enter the TX code channel selection mode.
  - Push  or  to select the desired TX code channel, if desired.
- ③ Push and hold  (TX Code CH) for 2 sec. again to enter the TX code edit mode.

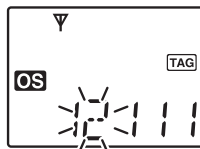
The editable digit starts blinking



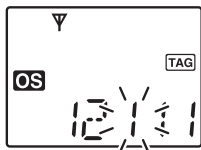
- ④ Push  (TX Code CH) to select the desired digit to be edited.



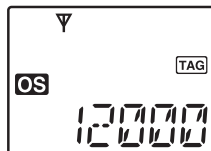
- ⑤ Push or to set the desired code.  
 • Select “\*” when group code is set.



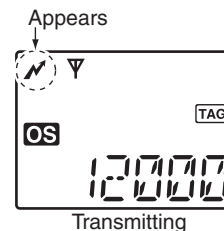
- ⑥ Push (TX Code CH) to set the digit and the editable digit move to right automatically.



- ⑦ Repeat step ⑤ and ⑥ to input all allowed digits.  
 ⑧ After setting the last digit, push (TX Code CH) to set the code and return to the TX code channel selection mode.



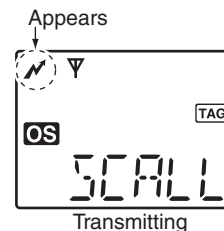
- ⑨ Push **[PTT]** to transmit to the selected TX code channel, or push (TX Code CH) to set the selected TX code channel and return to the stand-by mode.



**NOTE:** The TX code editable digit can only be set/changed with the optional CS-440 CLONING SOFTWARE.

## ✓ CONVENIENT!

Push (Function) to enter the function mode, then push and hold (Call) for 2 sec. to transmit the selected channel's TX code easily.

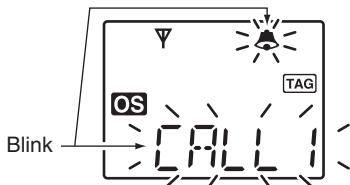


## 7 SELCALL OPERATION

### ■ When receiving a call

#### ◇ Receiving an individual call

- ① When receiving a RX code (default setting);
  - “PiRo” beeps sound.
  - The received code channel name is displayed, if programmed.
  - “🔔” and the displayed channel name\* blink, and the SelCall mute is released when the quiet mode is activated.
  - \*🔔 and the channel number blink when the channel name is not programmed.
- ② While pushing and holding **[PTT]**, speak into the microphone at a normal voice level.



**NOTE:** When the ID decode function is turned ON, the received ID code is displayed instead of the channel name, and memorised into the transceiver. The ID decode function can be turned ON using the optional CS-440 CLONING SOFTWARE.

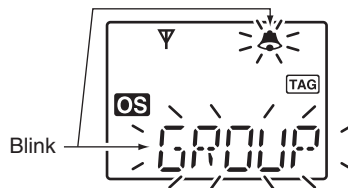
- **RX code** means the Receiving SelCall code. Max. 8 individual call channels can be pre-programmed into the transceiver using the CS-440.
- You can set the transceiver's condition when receiving an individual call using the CS-440. See the help file for setting details.

#### *Recall the memorised received ID code:*

- ① Push **[F SET]** (Function) to enter the function mode, then push and hold **[O-S-P RS]** (ID-MR) for 2 sec. to display the memorised received ID code.
- ② Push **[▲]** or **[▼]** to select the desired received ID code.
- ③ Push **[PTT]** to transmit the code on the selected channel.

#### ◇ Receiving a group call

- ① When receiving a group call (default setting);
  - “PiPi” beep sounds.
  - “🔔” and “GROUP” blink, and the SelCall mute is released when the quiet mode is activated.
- ② While pushing and holding **[PTT]**, speak into the microphone at a normal voice level if necessary.



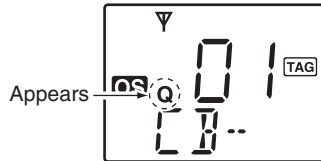
- You can set the transceiver's condition when receiving a group call with the CS-440. See the help file for setting details.



## ■ Quiet mode operation

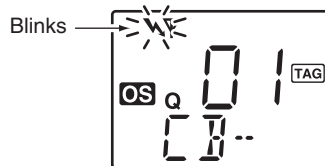
When the quiet mode operation is turned ON, the SelCall mute is activated and allows the silent operation until receiving a SelCall.

- ➡ Push **SET** (Function) to enter the function mode, then push **Q-P RS** (Quiet) to toggle the quiet mode ON and OFF.
  - “Q” appears when the quiet mode is in use.



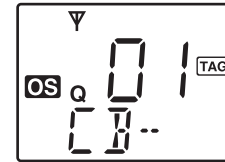
### To monitor the channel:

- ➡ Push **MONI T SQL** (Monitor) to release the mute (audio is emitted.)
  - “W” blinks when the monitor function is in use.



### To enable SelCall mute:

- ➡ When “W” blinks, push **MONI T SQL** (Monitor) to mute the channel.
  - “W” disappears.



**NOTE:** The unmute condition may automatically return to the mute condition after a specified time period depending on the pre-setting.

## ■ Stun function

When the transceiver is in the Stun condition, it will request a password at power ON. This password is the same as the Power ON password function. Once the password has been input, the transceiver will not prompt for it to be input again.

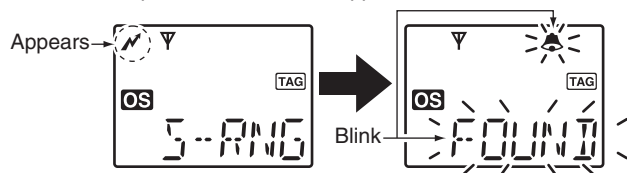
Cloning and use of the transceiver is disabled when the kill ID is received. By activating the clone write condition, the transceiver can be returned to an usable condition.  
(The internal data can not be accessed by the cloning read condition.)

## Smart-Ring and ATS (Automatic Transponder System)

These functions have an answer back feature, and allow you to confirmation of whether or not a call has reached the receiving party even if the operator is temporarily away from the transceiver. The Smart-Ring is for manual, and the ATS is for automatic confirmation.

### Smart-Ring

- Set the same CTCSS tone frequency for all of the group transceivers and turn the tone squelch ON. (pgs. 26, 41)
- Push **[F SET]** (Function) to enter the function mode, then push **[PRIO SET-P]** (S-Ring) to send the Smart-Ring call.
  - "**✓**" appears.
  - When a member of a specific group answers a call, "**✓**" and "**FOUND**" blink.
  - When no answer back is received, the transceiver emits short failure beep tones and "**FAILED**" appears.



- Push **[PTT]** to answer and to stop blinking.

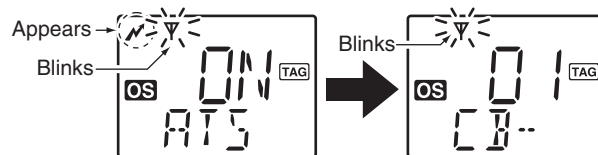
**NOTE:** The Smart-Ring function is available only when the called station has set the same CTCSS tone frequency and the same operating channel as you.

### NOTE:

- The setting at left is for the calling station only. A called party automatically sends an answer back signal without any pre-settings. All IC-440's operating on the same operating channel will answer back to the call in the surroundings communications area.
- When RX channel is selected, "**N/A**" appears.

### ATS

- Push **[F SET]** (Function) to enter the function mode, then push and hold **[MONI T SOL]** (ATS) for 2 sec. to turn the ATS function ON.
  - When RX channel is selected, error beep is emitted.
  - The transceiver starts to send a searching signal every 60 sec.
  - "**✓**" appears and "**✓**" starts blinking on the display when the function is activated.
  - When the transceiver receives an answer back signal, "**✓**" stays on the display until the next search transmit.
  - If no reply is received, "**✓**" blinks until the next search transmit.



- Push **[F SET]** (Function) to enter the function mode, then push and hold **[MONI T SOL]** (ATS) for 2 sec. to turn the ATS function OFF.

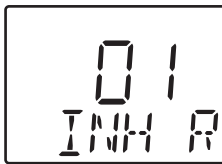
## ■ RX frequency setting (for RX channels only)

The receive frequency in the RX channels can be re-programmed within 450 to 520 MHz frequency range depending on the setting.

### ◇ RX channel setting

The RX channels does not appear on the LCD (default; "Inhibit" setting) and you cannot select it. So the RX channels should be set to "Enable" before programming the RX frequency.

- ① While pushing and holding \* and \*, turn power ON to indicate all pre-programmed RX channels (including the inhibited channels.)
- ② Select the desired channel with or , then push \* to set the displayed channel "Enable."



"Inhibit" setting



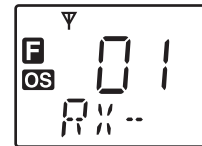
"Enable" setting

- ③ Turn the power OFF, then ON.

• The "Enable" channels appear on the LCD, and push then push / to select the desired RX channel.

### ◇ RX frequency programming

- ① Select the desired RX channel ('RX-XX'). (See at left)
- ② Push (Function) to enter the function mode, then push and hold (RX VFO) for 2 sec. to enter the RX VFO mode.
  - Push \* to toggle the bandwidth between wide or narrow.



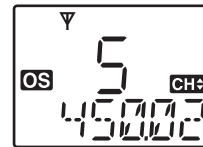
RX channel  
(in function mode)



RX VFO mode

\*Appears when  
Narrow channel  
spacing is set.

- ③ Push or several times to select the desired frequency.
  - The frequency changes according to the Wide/Narrow setting. (p. 37)



Wide channel spacing  
(25 kHz steps)

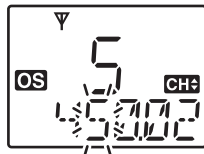


Narrow channel spacing  
(12.5 kHz steps)

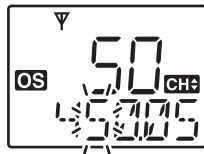
\*Regardless of the assigned key function.

## 8 OTHER FUNCTIONS

- ④ Push **SCAN TAG**\* to select the desired digit to be edited.

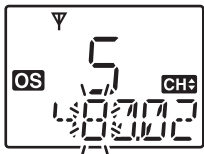


(Wide channel spacing)

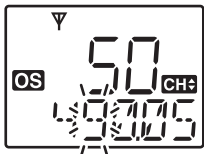


(Narrow channel spacing)

- ⑤ Set the desired digit via **▲** or **▼**.

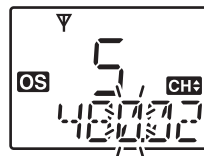


(Wide channel spacing)

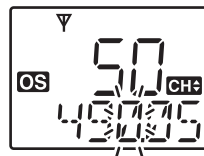


(Narrow channel spacing)

- ⑥ Push **SCAN TAG**\* to set the digit and the editable digit move to right automatically.

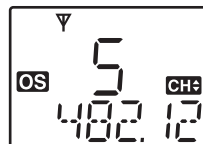


(Wide channel spacing)



(Narrow channel spacing)

- ⑦ Repeat steps ⑤ and ⑥ to input the desired frequency.



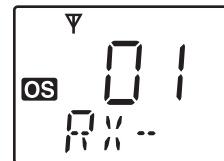
(Wide channel spacing)



(Narrow channel spacing)

- ⑧ Push and hold **SET**\* for 2 sec. to return to the normal operation condition.


- RX frequency setting is memorised to the channel.
- Pushing **SET**\* also returns to the normal operation condition. In this case, the RX frequency setting is not memorised to the channel. (temporary operation)

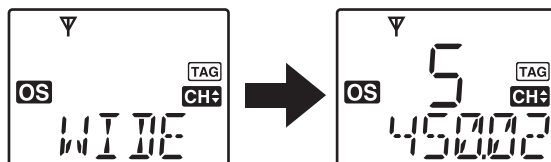


\*Regardless of the assigned key function.

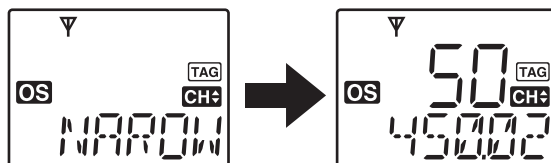
## Wide/Narrow function

This function temporarily/permanently changes the bandwidth between wide or narrow on the RX channel only.



- ① Select the desired RX channel. (p. 35)
- ② Enter the RX VFO mode. (p. 35)
- ③ Push \* to toggle the bandwidth between wide or narrow.



Wide channel spacing is selected



Narrow channel spacing is selected

- ④ Push and hold \* for 2 sec. to return to the normal operation condition.
  - The bandwidth setting is memorised to the channel.
  - Pushing \* also returns to the normal operation condition. In this case, the bandwidth setting is not memorised to the channel. (temporary operation)

\*Regardless of the assigned key function.








## 8 OTHER FUNCTIONS

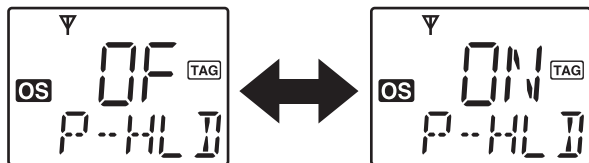
### ■ PTT hold function


USING SET MODE

The PTT switch can be operated as a one-touch PTT switch (each push toggles between transmit/receive). Using this function you can transmit without pushing and holding the PTT switch.

To prevent accidental, continuous transmission with this function, the time-out timer function is automatically set within the transceiver. See pgs. 40, 45 for details.

- ① Push and hold  (Set Mode) for 2 sec. to enter set mode.
- ② Push \* or \* several times until “P--HLD” appears.
- ③ Push  or  to set the PTT hold function ON or OFF.
- ④ Push and hold  for 2 sec. to turn the power OFF, or push and hold  (Set Mode) for 2 sec. to exit set mode.



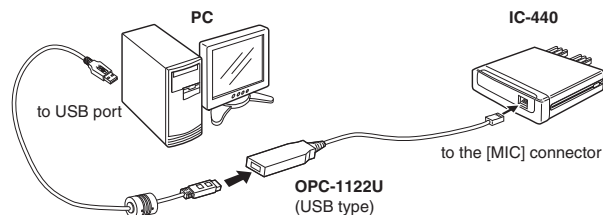
- ⑤ When the PTT hold function is set to ON, push [PTT] to transmit and push again to receive.
  - “” appears while transmitting.

\*Regardless of the assigned key function.

### ■ Data cloning

Cloning allows you to quickly and easily transfer the data from a personal computer to a transceiver using the optional CS-440 CLONING SOFTWARE.

Data can be cloning to and from a personal computer (Microsoft® Windows® 2000/XP/Microsoft® Windows Vista™ (32 bit)) using the optional CS-440 CLONING SOFTWARE and the optional cloning cable OPC-1122U (USB type). Consult the CS-440 CLONING SOFTWARE HELP file for details.



## ■ All reset

The function display may occasionally display erroneous information. This may be caused externally by static electricity or by other factors.

If this problem occurs, turn power OFF. After waiting a few seconds, turn power ON again. If the problem persists, perform the following procedure.

**/// IMPORTANT!:**  
Resetting the transceiver sets set mode values to default.

While Pushing ,  and , push and hold  for 2 sec. to reset the CPU.




- “AL RESET” appears on the function display when the transceiver is reset.



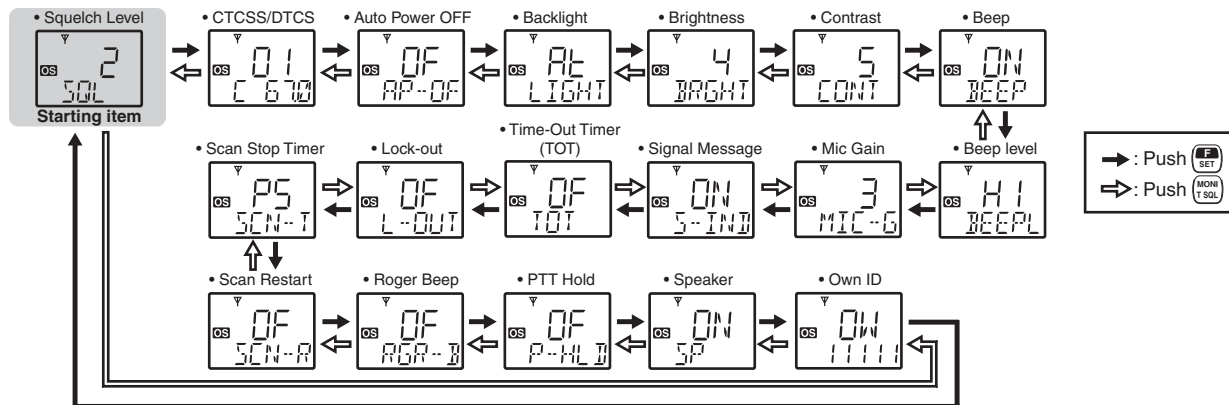
## ■ Set mode

Set mode allows you to change seldom used common setting for the transceiver, or individual setting for the operating channel. In this case you can “customize” transceiver operation to suit your preferences and operating style.








Available functions may differ depending on the pre-setting via the optional CS-440 CLONING SOFTWARE.

**NOTE:** Set mode can be accessed via the  (Set Mode) key operation after turning power ON with  and  (p. 19). In this case, “all set mode” is available.

## ◇ Set mode construction



## ◇ Set mode operation

- 1 Push and hold  (Set Mode) for 2 sec. to enter Set mode.
  - When no key is pushed for 30 sec. the transceiver returns to normal operation.
- 2 Push \* or \* to select the desired item, if necessary.
- 3 Push  or  to select the desired condition of the item.
- 4 Push and hold  for 2 sec. to turn the power OFF, or push and hold  (Set Mode) for 2 sec. to exit set mode.

\*Regardless of the assigned key function.

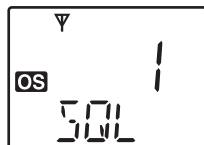


## SET mode items

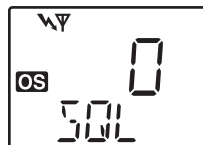
### ◇ Squelch level\*

Select the noise squelch threshold level within the range 0 to 9.

- There are 10 squelch levels to choose from 0 is completely open; 9 is a tight squelch; 1 is a loose squelch level.



Squelch level 1 (default)



Squelch level 0 ("W" appears)

### ◇ CTCSS tone frequency/DTCS code

Select the desired CTCSS tone frequency or DTCS code.

Pushing toggles the CTCSS/DTCS setting mode.



CTCSS tone frequency setting mode (default)



DTCS code setting mode

\*Regardless of the assigned key function.

### ◇ Auto Power OFF

The transceiver can be set to automatically turn OFF after a set period has passed when no key operation is performed.

- 0.5 to 4.0 hours (0.5 hours steps) and OFF can be specified.



Auto power OFF  
is OFF (default)

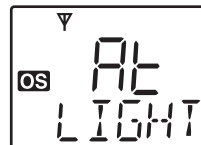


2.0 hours setting

### ◇ LCD backlight condition

The transceiver has a LCD backlight for night-time operation.

- ON : Backlight turns ON continuously.
- A2 (Auto2) : Lights for 5 sec. when any key except [PTT] is pushed, or the LCD indication is changed.
- At (Auto) : Lights for 5 sec. when any key except [PTT] is pushed or the SelCall signal is transmitted/ received.
- OF (OFF) : No backlight available.



Backlight Auto (default)

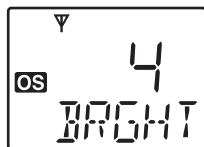


Backlight ON

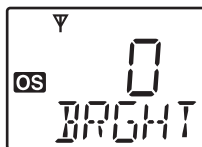
## 9 SET MODE

### ◇ LCD backlight brightness

The LCD backlight brightness can be adjusted from 0 (dark) to 7 (bright).



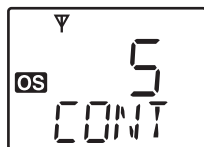
Bright level 4 (default)



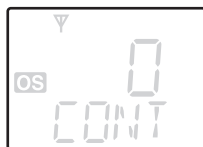
Bright level 0

### ◇ LCD contrast

The contrast level of the LCD can be adjusted from 0 (dark) to 7 (bright).



Contrast level 5 (default)



Contrast level 0

### ◇ Beep tone

You can select silent operation by turning key-touch beep tones OFF, or you can have confirmation beeps sound at the push of a key by turning beep tones ON.



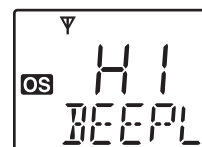
Beep tone ON (default)



Beep tone OFF

### ◇ Beep level

Set the key-touch beep output level HIGH or LOW.



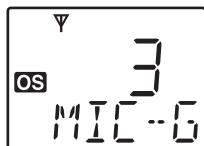
Beep level High (default)



Beep level Low

### ◇ Microphone gain level

Set the microphone gain level from 1 (Min) to 5 (Max).



Mic gain level 3 (default)



Mic gain level 1

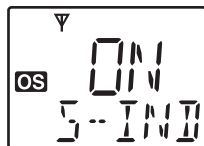
### ◇ Signal message displaying function

This function display “ROGER” or “SCALL” when the roger beep signal or selcall signal is transmitting.

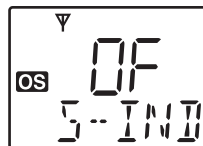
It is useful to check the roger beep function or selcall function is ON or OFF.

ON : “ROGER” or “SCALL” displays on the function display when the roger beep signal or selcall signal is transmitting.

OF (OFF) : No message is displayed.



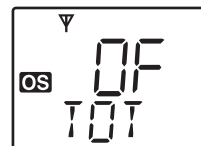
Signal message display ON (default)



Signal message display OFF

### ◇ Time-Out timer (TOT)

The Time-Out Timer (TOT) function limits continuous transmission to prevent accidental prolonged transmission, etc. This timer cuts a transmission OFF after 1 min. of continuous transmission.



TOT OFF (default)



TOT ON

### ◇ Lock-Out function

Select the transmission lock-out (temporary transmission inhibit) capability.

RP (Repeater Lockout) : Transmission is permitted only while receiving a matched CTCSS tone, or receiving no signal.

bu (Busy Lockout) : Transmission is inhibited while receiving a signal.

OF (OFF) : No restriction for receiving a signal.



Lockout OFF (default)



Repeater lockout setting

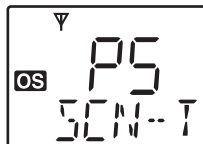
## 9 SET MODE

### ◇ Scan resume timer

The scan resume condition can be set as a pause (P5) or timer scan (15/10/5). When a signal disappears, scan resumes after 5 sec. has passed regardless of the setting.

15/10/5 : Scan pauses for 15, 10 or 5 sec. when a signal is detected, then resumes after that.

P5 : Scan pauses until the signal disappears and then resumes after 5 sec. (Default and recommended setting).



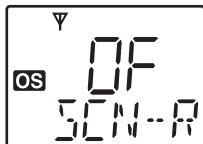
Scan resume timer  
P5 (default)



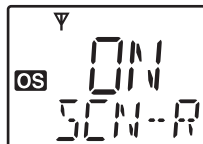
10 sec. setting

### ◇ Scan restart function

This function starts the scan after the transmission is performed during scan and 10 sec. has passed.



Scan restart timer  
OFF (default)



Scan restart timer ON

### ◇ Roger Beep

This function emits a beep on the communication party to inform the transmission is finished.



Roger beep OFF (default)

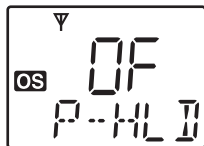


Roger beep ON

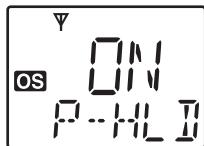
### ◇ PTT Hold function

The PTT switch can be operated as a one-touch PTT switch (each push toggles between transmit/receive). Using this function you can transmit without pushing and holding the PTT switch.

To prevent accidental, continuous transmission with this function, the time-out timer function is automatically set to the transceiver. See p. 38 for details.



PTT hold OFF (default)



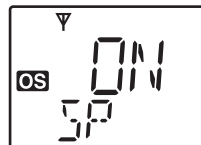
PTT hold ON

### ◇ Internal speaker setting

This function sets if audio is emitted from the HM-182 or an external speaker (if connected).

ON (ON) : The audio from the HM-182 sounds even when an external speaker is connected.

At (AUTO) : The audio from the HM-182 is muted then [X] appears on the function display. (The audio comes from the HM-182 when the external speaker is not connected).



Internal speaker ON (default)

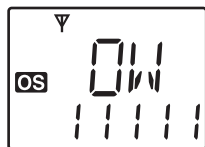


Internal speaker Auto

## 9 SET MODE

### ◇ Own ID

This function allows you to edit the Own ID.



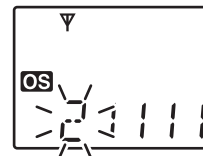
Own ID '11111'

#### **To edit the Own ID:**

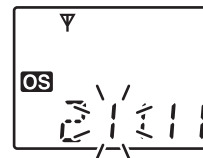
- ① Push and hold (Set Mode) for 2 sec. to enter Set mode.
- ② Push \* or \* to select the "Own ID" item.
- ③ Push and hold \* for 2 sec. to enter the Own ID edit mode.



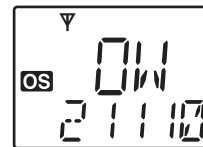
- ④ Push or several times to select the desired digit.



- ⑤ Push \* to set the digit and the editable digit move to right automatically.








- ⑥ Repeat steps ④ and ⑤ to input the desired ID code.
- ⑦ After setting the last digit, push \* to set the Own ID code.



\*Regardless of the assigned key function.

## ■ Troubleshooting

If your transceiver seems to be malfunctioning, please check the following points before sending it to a service center.

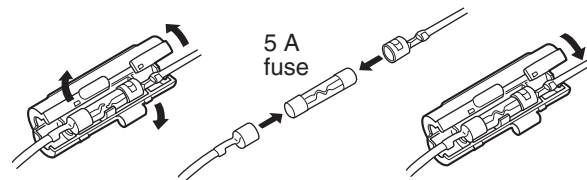
PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
The transceiver's power will not turn ON.	<ul style="list-style-type: none"> <li>Power connector has a poor contact.</li> <li>Polarity of the power connection is reversed.</li> <li>Blown fuse.</li> </ul>	<ul style="list-style-type: none"> <li>Check the connector pins.</li> <li>Re-connect the power cable observing the proper polarity.</li> <li>Check the cause, then replace the fuse.</li> </ul>	<p>—</p> <p>p. 4</p> <p>p. 48</p>
No sound comes from the speaker.	<ul style="list-style-type: none"> <li>Volume is too low.</li> <li>The volume level is set to 0 (audio muting).</li> <li>Squelch is set too high.</li> <li>A selective call or squelch function is activated such as pocket beep or tone squelch.</li> </ul>	<ul style="list-style-type: none"> <li>Push .</li> <li>Push .</li> <li>Set the squelch level to the threshold.</li> <li>Turn the appropriate function OFF.</li> </ul>	<p>p. 14</p> <p>p. 14</p> <p>p. 18</p> <p>pgs. 26–28</p>
Sensitivity is low and only strong signals are audible.	Antenna feedline or the antenna connector has a poor contact or is short circuited.	Check, and if necessary, replace the feedline or solder the antenna connector again.	p. 5
No contact possible with another station.	The other station is using tone squelch.	Turn the tone squelch function ON.	p. 26
Frequency cannot be set.	<ul style="list-style-type: none"> <li>The lock function is activated.</li> <li>Priority scan is paused on the watching frequency.</li> <li>The channel selection mode is not set.</li> </ul>	<ul style="list-style-type: none"> <li>Push and hold  for 2 sec. to deactivate the lock function.</li> <li>Push  to cancel the scan.</li> <li>Push  to enter the channel selection mode.</li> </ul>	<p>p. 18</p> <p>p. 24</p> <p>p. 14</p>
Scan does not operate.	<ul style="list-style-type: none"> <li>The squelch is open.</li> <li>Priority scan is activated.</li> </ul>	<ul style="list-style-type: none"> <li>Set the squelch to the threshold point.</li> <li>Cancel the scan.</li> </ul>	<p>p. 18</p> <p>p. 24</p>
Transmission is automatically cut off.	Time-out timer function is activated.	Set the timer to OFF.	p. 43

## 10 MAINTENANCE

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
Transmission continues even when the PTT is released.	<ul style="list-style-type: none"><li>• PTT hold function is activated.</li></ul>	<ul style="list-style-type: none"><li>• Turn the function OFF.</li></ul>	pgs. 38, 45
The function display shows erroneous information.	<ul style="list-style-type: none"><li>• The CPU is malfunctioning.</li></ul>	<ul style="list-style-type: none"><li>• Reset the CPU.</li></ul>	p. 39

### ■ Fuse replacement

If the fuse blows or the transceiver stops functioning, find the source of the problem if possible, and replace the damaged fuse with a new one, rated at (FGB 5 A) as shown at right.





## ■ Specifications

### ◇ GENERAL

- Frequency coverage
  - CB : 476.425–477.400 MHz
  - RX : 450.000–520.000 MHz (RX only)
- Mode : 16K0F3E
- Number of channels : Max 128ch/8 banks
- Antenna impedance : 50  $\Omega$
- Input impedance : 600  $\Omega$
- Output impedance : 4  $\Omega$
- Intermediate frequency : 1st 46.35 MHz, 2nd 450 kHz
- Operating temperature range : –10°C to +60°C
- Power supply voltage : 13.8 or 27.6 V DC nominal (Negative ground)
- Current drain (approx.)
  - DC 13.8 V : RX stand-by 400 mA  
RX Max. audio 1500 mA  
TX (5 W) 2000 mA
  - DC 27.6 V : RX stand-by 250 mA  
RX Max. audio 1000 mA  
TX (5 W) 1200 mA
- Dimensions : 125 (W) × 25(H) × 160.7(D) mm (Projections not included)
- Weight (approx.) : 770 g (with HM-182)

### ◇ TRANSMITTER

- Output power : 5 W/1 W (selectable)
- Modulation system : Variable reactance frequency modulation
- Max. frequency deviation :  $\pm 5$  kHz
- Frequency error :  $\pm 2.5$  ppm
- Spurious emissions : Less than –30 dBm
- Adjacent channel power : Less than –22 dBm
- Audio harmonic distortion : 1% typical (60% deviation)
- Residual modulation : 40 dB typical
- Limiting charact of modulator: 70 to 100% of max. deviation

### ◇ RECEIVER

#### [CB (476.425–477.400 MHz)]

- Sensitivity (12 dB SINAD) : 0.22  $\mu$ V typical
- Squelch sensitivity : 0.2  $\mu$ V typical (Threshold)
- Hum and noise : 50 dB typical
- Intermodulation rejection ratio: 75 dB typical
- Spurious response rejection ratio: 80 dB typical  
More than 65 dB (IF/2)
- Adjacent channel selectivity : 78 dB typical
- Conducted spurious radiation : Less than –57 dBm (9 kHz–2.9 GHz)
- Audio output power : 5.0 W typ. at 10% distortion with a 4  $\Omega$  load
- Audio frequency response : +1 to –3 dB of 6dB/octave from 300 to 3000 Hz

---

# 11 SPECIFICATIONS AND OPTIONS

## ■ Specifications (Continued)

### ◇ RECEIVER

[RX (450.000–520.000 MHz)] (Except CB (476.425–477.400 MHz))

- Sensitivity (12 dB SINAD) : 0.25  $\mu$ V typical
- Hum and noise : 50 dB typical
- Conducted spurious radiation : Less than –57 dBm  
(9 kHz–2.9 GHz)
- Audio frequency response : +1 to –3 dB of 6dB/octave from 300  
to 3000 Hz

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

## ■ Options

### ◇ MICROPHONE

- **HM-182** HAND MICROPHONE  
Wired remote control microphone with key backlight. Same as supplied with the transceiver.
- **OPC-647** EXTENSION CABLE  
2.5 m microphone extension cable. Same as supplied with the transceiver.

### ◇ SPEAKER

- **SP-22** EXTERNAL SPEAKER  
Compact and easy-to-install.

### ◇ CLONING SOFTWARE

- **CS-440** CLONING SOFTWARE + **OPC-1122U** USB CLONING CABLE  
Provides quick and easy programming items, such as set mode contents, zone type, etc. via PC's USB terminal.

## ICOM LIMITED WARRANTY

Icom Incorporated is proud of its advanced technology and the high quality of workmanship and components included in the production of every product.

Icom (Australia) Pty. Ltd., the authorised Icom Distributor, warrants this Icom product within Australia to be free from defects in material or workmanship for the applicable period indicated below:

- **Radios:**

**Three (3) years** from the date of purchase, (excluding accessories), when purchased from an Australian authorised Icom Dealer.

- **Accessories:**

**One (1) year** from the date of purchase, when purchased from an Australian authorised Icom Dealer.  
(hand microphone and external speaker)

Icom (Australia) Pty. Ltd. will, at its discretion, and subject to the terms and conditions stated below, repair or replace any goods (Includes supplied accessories such as the HM-182. See "Supplied accessories" p. 1) or component parts which after examination are found to be defective.

Unless otherwise expressly provided, any fault arising from defective workmanship or material shall be rectified by Icom where the equipment is returned freight prepaid to Icom, Service Dept. Unit 1/103 Garden Road, Clayton, Victoria 3168

## This warranty shall not apply:

- (a) To an Icom Product which has failed due to improper installation, misuse, accident, alteration or unauthorised repair or modification.
- (b) If any serial number or identification plate attached to the goods has been altered, rendered illegible, or removed
- (c) If the goods have been damaged by corrosion, deterioration or the like contributed to abnormal temperatures; the influence of foreign matter or energy or physical or chemical properties of water, steam or chemical compounds.

To any Icom product not originally supplied by Icom (Australia) Pty Ltd to an authorized Dealer of Icom (Australia) Pty. Ltd.

**Please check with us if you feel an Icom product is being offered for sale that has been sourced from other than Icom (Australia) Pty Ltd.**

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## 12 WARRANTY AND PRODUCT REGISTRATION

### WARRANTY SERVICE INSTRUCTIONS

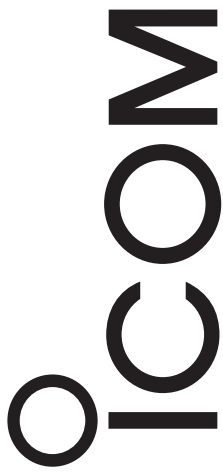
1. If you are experiencing difficulty with your Icom equipment return it to Icom (Australia) Pty. Ltd., preferably in the original carton, without accessories and include a brief explanation of the difficulty you are experiencing. Although we take the utmost care Icom (Australia) Pty. Ltd. shall assume no liability for the loss or safe return of an accessory item.
2. Include accessories only if your specific situation indicates an accessory related difficulty exists. It is important to itemise these accessories on the note of explanation.
3. If the requested repairs or service are within the terms of the warranty, your equipment will be repaired and returned prepaid to any designated point within Australia. The freight carrier is at the option of Icom (Australia) Pty Ltd.
4. If the requested repairs or service are not within the terms of warranty or if you fail to provide acceptable evidence of the date of purchase you will be contacted with a quote to repair your equipment. Return freight will be charged in this instance.
5. All equipment returned under warranty must be freight prepaid. Freight collect packages will not be accepted.

The benefits conferred by this warranty are in addition to all implied warranties, other rights and remedies in respect of the product which the consumer has under the Trade Prac-

tices Act and similar State and Territory Laws.

### PRODUCT REGISTRATION

Please log on to "<http://www.icom.net.au/>" to register your Icom product, or complete & return the registration reply page.



**REGISTRATION CARD**

PLACE  
POSTAGE  
HERE

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**icom (Australia) Pty. Ltd.**

**Unit 1/103 Garden Road  
Clayton VIC 3168**

## Product and Owners detail

Model No: \_\_\_\_\_ Serial No: \_\_\_\_\_ Date of Purchase: \_\_\_\_\_

Dealers Name: \_\_\_\_\_

Purchasers Name: \_\_\_\_\_

Purchasers Address: \_\_\_\_\_

Email: \_\_\_\_\_ Contact Phone No: \_\_\_\_\_ Occupation: \_\_\_\_\_

## Answering the following question will better help us meet your future needs:

In what media have you seen ICOM Advertising?

☐ Newspaper ☐ Magazine ☐ TV ☐ Radio ☐ Website Other: \_\_\_\_\_

Magazines you regularly purchase and/or subscribe to: \_\_\_\_\_

I would like more information on the following:

☐ Air Band ☐ Amateur ☐ Commercial Radios ☐ Marine ☐ Receiver ☐ UHF CB

Other Radio Communications Equipment you use: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Thank you for completing this Registration, we feel confident you will enjoy many years of reliable performance from your Icom IC-440.


MEMO




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The follow transceivers can also communicate with IC-440.  
Ask your Icom (Australia) authorized dealer or see Icom home page  
(<http://www.icom.net.au/>) for details.



**IC-41S**  
**(Handheld type)**



**IC-400PRO**  
**(Mobile type)**

A-6678D-1AU-①  
Printed in Japan  
© 2008 Icom Inc.

Printed on recycled paper with soy ink.

**Icom Inc.**

1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan