iCOM

INSTRUCTION MANUAL

SURVIVAL CRAFT 2-WAY RADIO

IC-GM1600E

Icom Inc.

RECOMMENDATION

CLEAN THE TRANSCEIVER THOROUGHLY WITH FRESH WATER after exposure to saltwater, and dry it before operation. Otherwise, the transceiver's keys, switches and controllers may become inoperable due to salt crystallization.

NOTE: DO NOT wash the transceiver in water if there is any reason to suspect the waterproofing may not be effective. For example, in cases where the battery pack rubber seal is damaged, the transceiver/battery pack is cracked or broken, or has been dropped, or when the battery pack is detached from the transceiver.
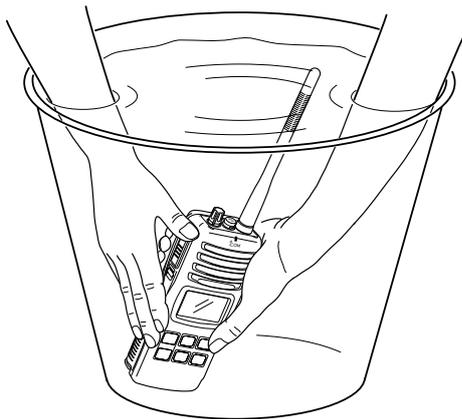
FOREWORD

Thank you for purchasing this Icom radio. The IC-GM1600E SURVIVAL CRAFT 2-WAY RADIO is designed and built with Icom's state of the art technology and craftsmanship. With proper care this product should provide you with years of trouble-free operation.

IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL—This instruction manual contains important operating instructions for the IC-GM1600E.

EXPLICIT DEFINITIONS

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

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PRECAUTION

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

⚠️**WARNING! NEVER** hold the transceiver so that the antenna is closer than 2.5 cm from exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 5 to 10 cm away from the lips and the transceiver is vertical.

NEVER connect the transceiver to a power source other than the BP-234, BP-224*[1] or BP-252*[2]. Such a connection will ruin the transceiver.

*[1]For China version only, *[2]For except China version.

DO NOT use or place the transceiver in direct sunlight or in areas with temperatures below −20°C or above +55°C.

KEEP the transciever out of the reach of children.

KEEP the transceiver at least 0.9 meters away from your vessel's magnetic navigation compass.

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MAKE SURE the flexible antenna and battery pack are securely attached to the transceiver, and that the antenna and battery pack are dry before attachment. Exposing the inside of the transceiver to water will result in serious damage to the transceiver.

BE CAREFUL! The IC-GM1600E employs waterproof construction, which corresponds to IMO A.809 (19) (1 m depth for 5 min.). However, once the transceiver has been dropped, waterproofing cannot be guaranteed because of possible damage to the transceiver's case or the waterproof seal.

> **NOTE:**
> • According to IMO resolution MSC. 149 (77) (adopted on 3 June 2003), the following regulation has been executed.
> • "The equipment should have provisions for its attachment to the clothing of the user and also be provided with a wrist or neckstrap. For safety reasons, the strap should include a suitable weak link to prevent the bearer from being ensnared."
> • Instead of the handstrap, a neckstrap is supplied with the equipment on or after 1st July, 2005.

◇ **Priorities**

• Read all rules and regulations pertaining to priorities and keep an up-to-date copy handy. Safety and distress calls take priority over all others.

• You must monitor Channel 16 when you are not operating on another channel.

• False or fraudulent distress calls are prohibited under law.

◇ **Privacy**

• Information overheard but not intended for you cannot lawfully be used in any way.

• Indecent or profane language is prohibited.

◇ **Radio licenses**

(1) SHIP STATION LICENSE

When your craft is equipped with a VHF FM transceiver, you must have a current radio station license before using the transceiver. It is unlawful to operate a ship station which is not licensed.

Inquire through your dealer or the appropriate government agency for a Ship-Radiotelephone license. This license includes the call sign which is your craft's identification for radio purposes.

(2) OPERATOR'S LICENSE

A restricted Radiotelephone Operator Permit is the license most often held by small vessel radio operators when a radio is not required for safety purposes.

The Restricted Radiotelephone Operator Permit must be posted near the transceiver or be kept with the operator. Only a licensed radio operator may operate a transceiver.

However, non-licensed individuals may talk over a transceiver if a licensed operator starts, supervises, ends the call and makes the necessary log entries.

A current copy of the applicable government rules and regulations is only required to be on hand for vessels in which a radio telephone is compulsory. However, even if you are not required to have these on hand it is your responsibility to be thoroughly acquainted with all pertinent rules and regulations.

SUPPLIED ACCESSORIES AND ATTACHMENTS

■ Supplied accessories

Neckstrap

Battery charger[1],[2]
(with 2 screws)

Belt clip
(with 2 screws)

AC adapter[1]

Battery pack
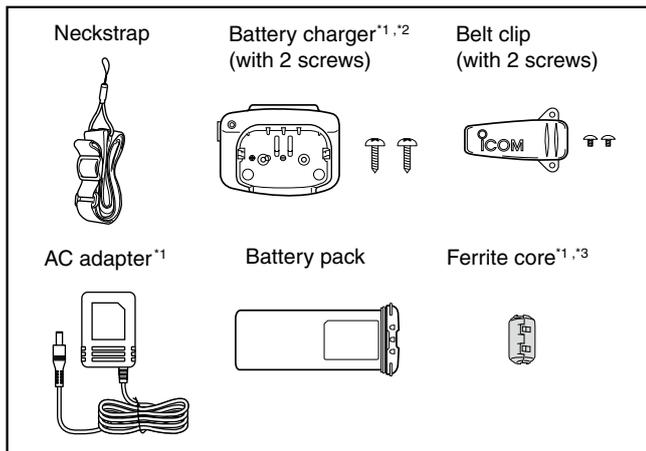
Ferrite core[1],[3]

[1]Not supplied with some versions.
[2]Differnt type is supplied depending on the version.
[3]Attach the ferrite core to the AC adapter before charging.
See. p. 17 for details.

■ Attachments

◇ **Neckstrap**
To attach the neckstrap, pass the neckstrap through the loop on the top of the transceiver as illustrated at right.
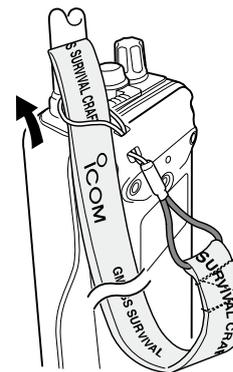
◇ **Belt clip**
Attach the belt clip to the transceiver as illustrated below.

Supplied screws
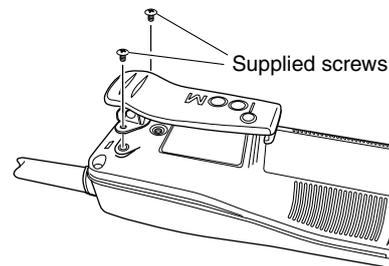
◇ Battery pack

To remove the battery pack:
Turn the screw counterclockwise, then pull the battery pack in the direction of the arrow as shown below.

To attach the battery pack:
Insert the battery pack in the IC-GM1600E completely, then turn the screw clockwise.

NEVER remove or insert the battery pack when the transceiver is wet or soiled. This may result water or dust getting into the transceiver/the battery pack and may result in the transceiver being damaged.

**NOTE:** When the lock screw does not easily (feels tight), check to ensure the battery pack is sufficiently inserted to the transceiver. **DO NOT** bang or cause high impact to the battery pack, as this may damage the battery pack/or the transceiver.
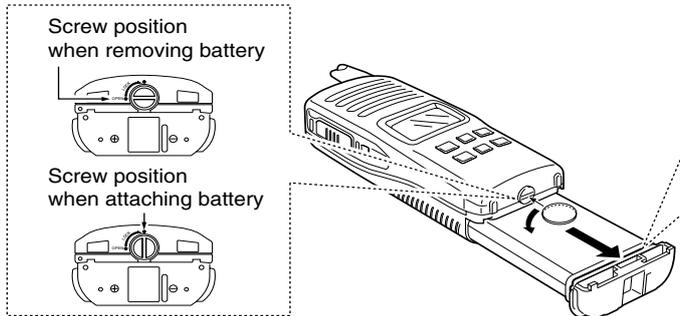
NOTE: When removing or attaching the battery pack, use a coin or flat-blade screwdriver to loosen or tighten the bottom screw.

CAUTION:
When attaching or removing a battery pack, make sure the rubber seal is set in the groove of the battery pack-correctly. If the seal is not neatly in the groove it may be damaged when attaching the battery pack.
If the seal is damaged, waterproofing is not guaranteed.

NOTE:
When attaching a battery pack, make sure dust or else does not adhere to the rubber seal. If dust or else is on the seal when attaching a battery pack, the water resistant may be reduced.

Make sure both the rubber seal (purple) is set to the groove correctly and dust or else does not adhere to it.

Screw position when removing battery

Screw position when attaching battery

Correct position   **Incorrect position**

Rubber seal

Groove

Battery pack   Battery pack

3 PANEL DESCRIPTION
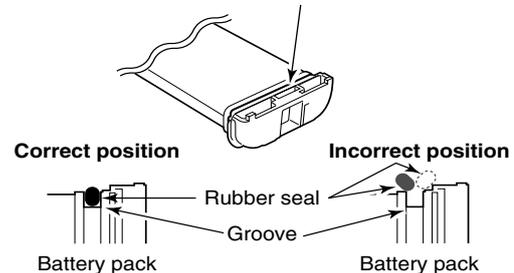
■ Front, top and side panels
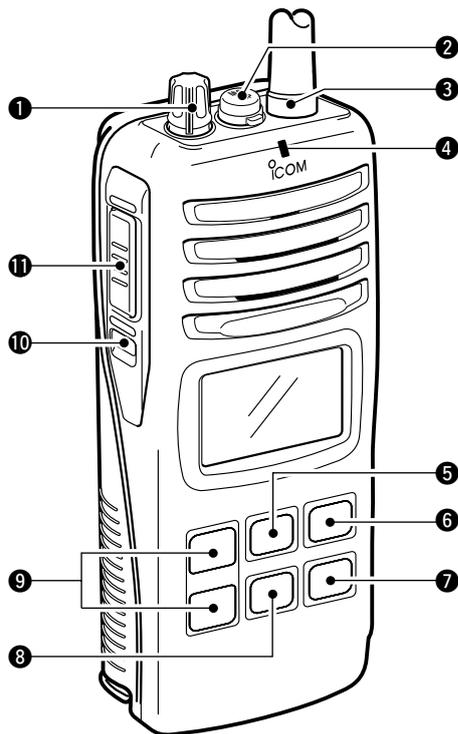
q VOLUME CONTROL [VOL]
Turns power ON and adjusts the audio level.

w MICROPHONE CONNECTOR [MIC/SP]
Connects the optional external microphone.

NOTE: Attach the [MIC/SP] cap when the optional speaker-microphone is not used.

e ANTENNA
Fixed type.

r TRANSMIT/RECEIVE INDICATOR
Lights green while receiving a signal or when the squelch is open; lights red while transmitting (lights orange while VOX function is used).

t CALL CHANNEL SWITCH [CALL]
➥ Selects the call channel when pushed. (p. 7)
➥ Push for 3 sec. to enter call channel programming condition. (p. 9)

y CHANNEL SWITCH [CH]
Push to return the previous condition when priority channel or call channel is selected. (p. 7)

u TRANSMIT POWER/LOCK SWITCH [Hi/Lo• ⊤–O]
➥ Selects high or low power when pushed. (p. 8)
➥ Toggles the lock function ON/OFF when pushed for 1 sec. (p. 10)

3

❽ **CHANNEL 16 SWITCH [16]**
Selects Channel 16 when pushed. (p. 7)

❾ **CHANNEL UP/DOWN SWITCHES [▲]/[▼]**
➥ Selects an operating channel. (pgs. 7–8)
➥ Selects the SET mode condition of the item. (p. 11)
➥ Selects the SET mode item when pushed with [SQL•MONI]. (p. 11)

❿ **SQUELCH SWITCH [SQL•MONI]**
➥ Push this switch, then adjust the squelch level with [▲]/[▼]. (p. 9)
➥ Manually opens the squelch for monitoring the channel while pushed and held. (p. 10)
➥ While pushing this switch, turn power ON to enter the set mode. (p. 11)

⓫ **PTT SWITCH [PTT]**
Push and hold to transmit; release to receive.

■ Function display
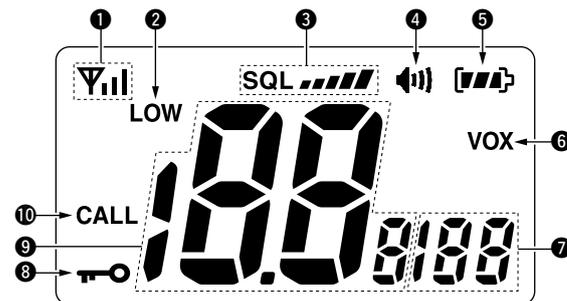
❶ **SIGNAL STRENGTH INDICATOR** (pgs. 10, 13)
Shows the relative signal strength while receiving signals.

❷ **TRANSMIT POWER INDICATOR** (p. 8)
➥ "LOW" appears when low power is selected.
➥ No indication appears when high power is selected.

❸ **SQUELCH LEVEL INDICATOR** (p. 9)
Show the squelch level.

❹ **MONITOR INDICATOR** (p. 10)
Appears when the monitor function is activated.

3 PANEL DESCRIPTION

❺ BATTERY INDICATOR

Indicates remaining battery power.

• Using rechargeable battery pack

Indication	▯▮▮▯	▯▮▮ ▯	▯▮ ▯	▯ ▯
Battery level	Full	Middle	Charging required	No battery

▯▮▮▯ blinks when the battery is over charged.

• Using BP-234 battery pack

Indication	▯▮▮▯	▯▮▮ ▯	▯▮ ▯	▯ ▯
Battery level	Full	Middle	A new battery pack is required	No battery

❻ VOX INDICATOR

"VOX" appears when the VOX function is used. (p. 10)

❼ SET MODE ITEM READOUT

Indicates the SET mode item while in the SET mode. (p. 11)

❽ LOCK INDICATOR

Appears when the lock function is activated. (p. 10)

❾ CHANNEL NUMBER READOUT

➥ Indicates the selected operating channel number.

➥ In SET mode, indicates the selected condition.

❿ CALL CHANNEL INDICATOR

Appears when the call channel is selected. (p. 7)

NOTE: The backlight is ON at all times.

■ Channel selection

◇ Channel 16

Channel 16 (Distress channel) is used for establishing initial contact with another station and for emergency communications. While standing by, you must monitor Channel 16.

① Push [16] to select Channel 16.
② Push [CH] to return to the condition before selecting Channel 16, or push [▲]/[▼] to select the operating channel.

Push **16**
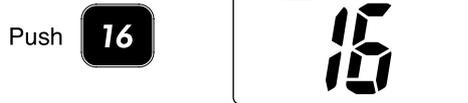
◇ Call channel

The call channels can be re-programmed (p. 9) and may be used to store your most often used channels for quick recall.

① Push [CALL] to select the call channel.
  • "CALL" and the call channel number appear.
  • Call channel can be re-programmed. See the "Call channel programming" on p. 9 for details.
② Push [CH] to return to the condition before selecting the call channel, or push [▲]/[▼] to select the operating channel.

Push **CALL**
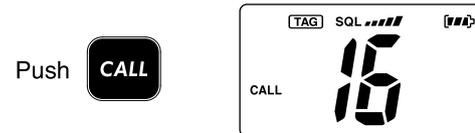
■ Receiving and transmitting

CAUTION: Transmitting without an antenna may damage the transceiver.

① Rotate [VOL] clockwise to turn power ON.
② Set the volume and squelch level.
  ➥ Push [SQL•MONI], and push [▼] to open the squelch.
  ➥ Push [SQL•MONI] to stop "SQL" indicator blinking, then rotate [VOL] to set the volume level.
  ➥ Push [SQL•MONI], and push [▲]/[▼] to set the squelch level.
③ Push [▲]/[▼] to select the desired channel.
  - When receiving a signal, the [TRANSMIT/RECEIVE] indicator lights green while audio is emitted from the speaker.
  - Further adjustment of [VOL] may be necessary at this point.
④ Push [Hi/Lo•▄▄o] to select the output power if necessary.
  - "LOW" appears when low power is selected; no indication when high power is selected.
  - Choose low power to conserve battery power, choose high power for longer distance communications.
⑤ Push and hold [PTT] to transmit, then speak into the microphone.
  - The [TRANSMIT/RECEIVE] indicator lights red while transmitting.
⑥ Release [PTT] to receive.

IMPORTANT: To maximize the readability of your transmitted signal, pause a few sec. after pushing [PTT], hold the microphone 5 to 10 cm from your mouth and speak into the microphone at a normal voice level.

⑤ Push to transmit
⑥ Release to receive

① Power ON
② Set volume

Speaker

Microphone

② Set the squelch level

② Set the squelch level
③ Set channel

④ Set output power
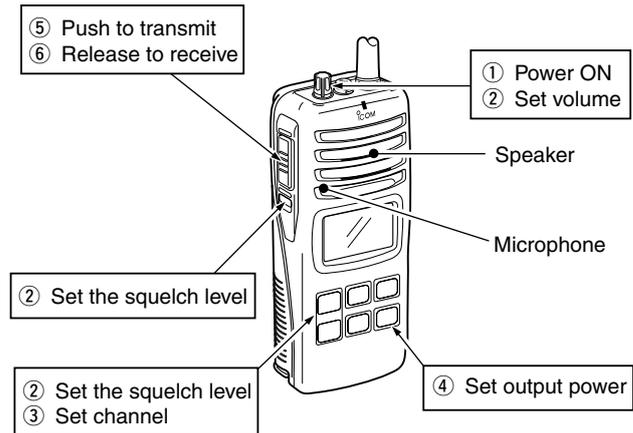
■ Call channel programming

The call channel switch is used to select the default channel, however, you can program your most-often-used channel for quick recall.

① Push [CALL] to select the call channel.
　• "CALL" and call channel number appear.

② Push [CALL] again for 3 sec. (until a long beep changes to 2 short beeps) to enter call channel programming condition.
　• Call channel number to be programmed flashes.
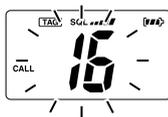
③ Push [▲]/[▼] to select the desired channel.
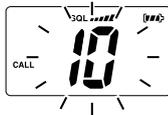
④ Push [CALL] to program the displayed channel as the call channel.
　• The call channel number stop flashing.
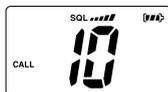
■ Adjusting the squelch level

To adjust the IC-GM1600E's squelch level, use the [▲]/[▼] keys as desired below. In order to receive signals properly, the squelch must be adjusted to the proper level.

① Push [SQL•MONI], then adjust the squelch level with [▲]/[▼].
　- "SQL" indicator starts blinking.
　- There are 11 squelch levels to choose from: OP is completely open; 10 is tight squelch; 1 is loose squelch level.
　- When no switch is pushed for 5 sec., the transceiver returns to normal condition.

Blinks during the squelch level adjutment.

Push SQL

Indicates the squelch level.
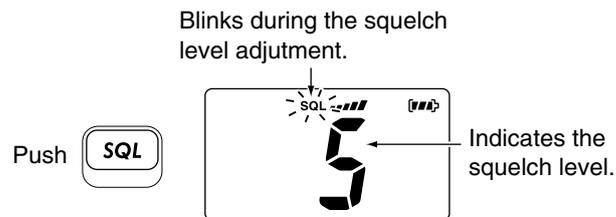
② Push [SQL•MONI] again to return to normal condition.

■ Lock function

This function electronically locks all switches (except for [PTT], [SQL•MONI] and [Hi/Lo• 🔑]) to prevent accidental channel changes and function access.

➥ Push [Hi/Lo•🔑] for 1 sec. to turn the lock function ON and OFF.

Push **Hi/Lo** for 1 sec.

Appears while the lock function is used.
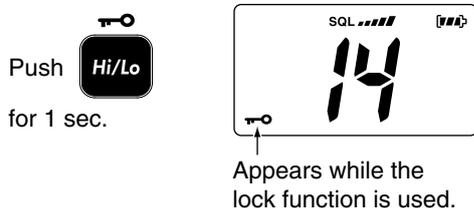
■ Signal strength indicator function

The received signal strength level is indicated by number of bars as below.
This indicator can be hidden by using the set mode (p. 13) if deired.

Indication	📶	📶	📶	📶
Signal strength	Strong	Middle	Weak	No signal or very weak

■ Monitor function

The monitor function releases the noise squelch mute to check the volume level. See p. 12 for details of the monitor switch action.

➥ Push [SQL•MONI] for 1 sec. to activate the monitor function.
• " 🔊 " appears and audio is emitted.

■ VOX function (FOR ON-BOARD USE ONLY)

The VOX function (voice operated transmission) starts transmission without pushing [PTT] when you speak into microphone; then automatically returns to receive when you stop speaking (hands-free operation becomes possible).

NOTE: An optional headset and optional headset adapter is required for the VOX operation.

➥ Push and hold [SQL•MONI], then push [Hi/Lo•🔑] to turn the VOX function ON/OFF while connecting the optional headset and optional headset adapter to the [MIC/SP] connector.
• "VOX" appears on the LCD while the VOX function turns ON.
• The "VOX gain" and "VOX delay" can be set on the SET mode. (p. 14)

■ SET mode programming

SET mode is used to change the condition of 9 transceiver functions: Beep tone function, Monitor switch action, LCD contrast selection, Self check function, Battery voltage indicator, Signal strength indicator, Squelch sensitivity function, VOX gain and VOX delay.

◇ SET mode operation

① Turn power OFF.
② While pushing [SQL•MONI], turn power ON to enter the SET mode.
• "bp" (Beep tone function setting) appears.
③ Push [SQL•MONI] or [SQL•MONI] and [▲]/[▼] to select the desired item, if necessary.
④ Push [▲]/[▼] to select the desired condition of the item.
⑤ Push [16] to exit the SET mode.

◇ **SET MODE ITEMS** The displays show the default settings, and the selected item is displayed in the dotted circle.

· VOX gain* · VOX delay* · Beep tone · Monitor switch · LCD contrast

*Available for on-board use only Starting item

: Push [SQL] (Push [SQL] and [▲])

: Push [SQL] and [▼]

· Squelch sensitivity · Signal strength indicator · Battery voltage · Self check
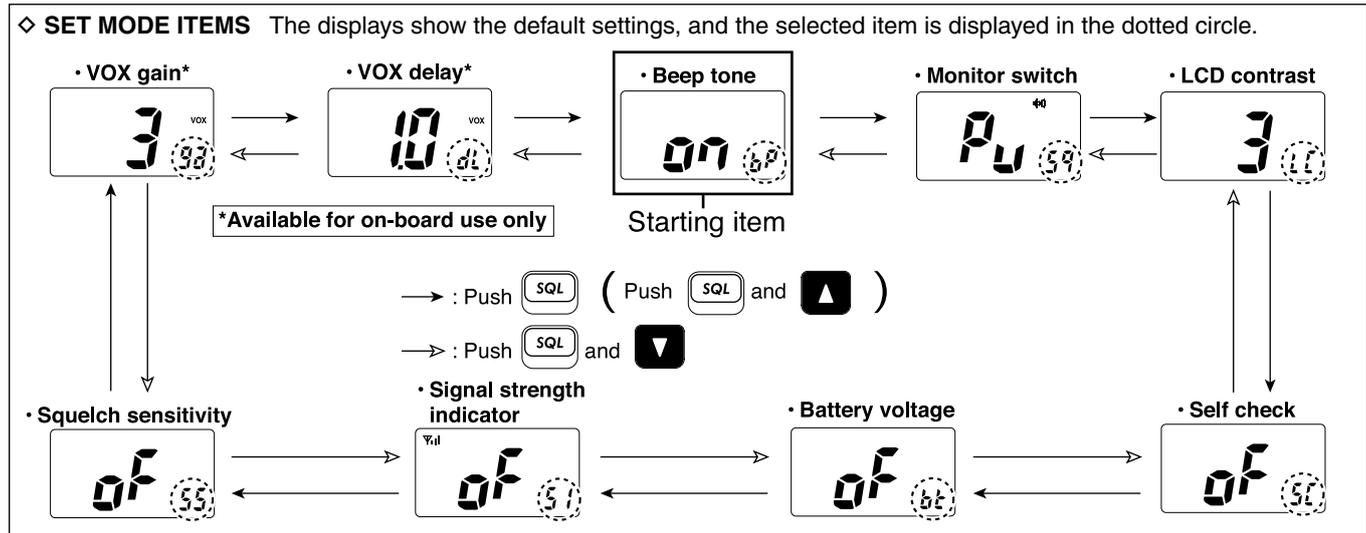
■ SET mode items

◊ Beep tone function "bP"

You can select silent operation by turning the beep tones OFF, or you can have 2 types of confirmation beeps sound at the push of a switch. When "ON" is selected, a fixed beep (Pi) sounds, and when "US" is selected, the preset beeps (e.g. do, re, mi) sound.

• Beep tone synchronises with the volume level.
• The beeps sound during call channel programming even if this function is turned OFF.

Beep tone ON (default)   **Push**   Beep tone OFF
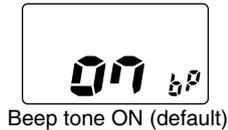
◊ Monitor switch action "Sq"

The monitor switch action cuts off the squelch function temporarily. This switch action contains PUSH (Pu) or HOLD (Ho) settings as shown below.

• Pu (PUSH): After pushing [SQL•MONI] for 1 sec., the squelch opens and emits audio. The squelch is held open while continuously pushing and holding [SQL•MONI]. (default)

• Ho (HOLD): After pushing [SQL•MONI] for 1 sec., the squelch opens and emits audio even [SQL•MONI] is released. To close the squelch, push any switch.

Middle contrast (default)   **Push**   Low contrast
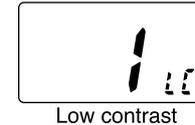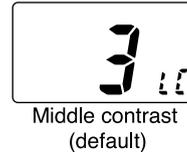
◊ LCD contrast selection "LC"

The contrast of the LCD can be adjusted from 4 levels.

• 1 (bright)–4 (dark); 3 (default)

Push setting (default)   **Push**   Hold setting
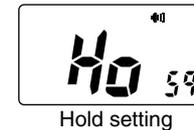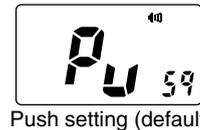
◇ Self check function "SC"

The self check function checks the transceiver conditions by itself, and informs you in case a problem is found. Self check automatically and quickly runs through its diagnostic steps each time the radio is turned ON. Afterwards, the radio switches to normal operation mode.

• Temperature : Outside of −35°C to +80°C (approx.)

• Connected battery voltage

Self check OFF (default)　　**Push**　　Self check ON
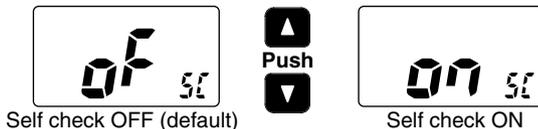
When error messages as shown below are displayed, see troubleshooting for advice. (p. 21)

Temperature error　　Battery voltage error
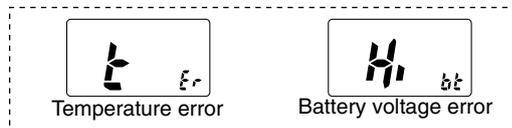
◇ Battery voltage indicator "bt"

This function controls display or non-display settings of the connected battery pack's voltage when the power is ON.

• The voltage of the connected battery pack is displayed for 2 sec. after power is turned ON.

Battery voltage indication OFF (default)　　**Push**　　Battery voltage indication ON
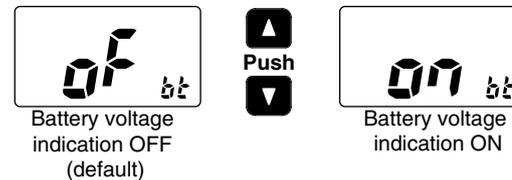
◇ Signal strength indicator "SI"

The signal strength indicator displays received signal strength as "S-meter". This function is convenient to check the signal strength visually.

• The strength is displayed at 4 steps.

• The antenna mark and 3 bars appear when receiving strong signals.

• The antenna mark only appears when receiving no signal.

Signal strength indication OFF (default)　　**Push**　　Signal strength indication ON

13
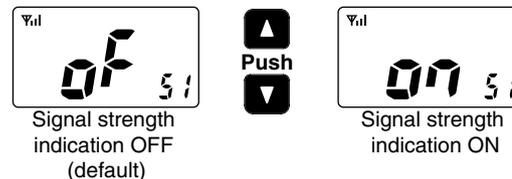
◇ **Squelch sensitivity function** "SS"
When this function is turned ON, blocking against noise is improved. Therefore the squelch is not easily affected by noise.

Squelch sensitivity OFF
(default)

Push

Squelch sensitivity ON
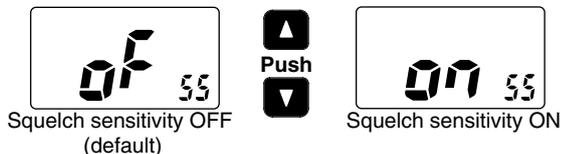
◇ **VOX gain** "ga"
  (Available for on-board use only)
Adjusts the VOX gain (from 1 to 6) to level when speaking with the optional headset.
• In case of setting to 1, the VOX gain sets to sharpening.
• In case of setting to 6, the VOX gain sets to dulling.

VOX gain 3 (default)

Push

VOX gain 6
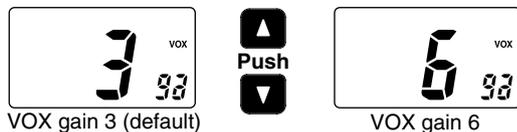
◇ **VOX delay** "dL"
  (Available for on-board use only)
Sets the VOX delay timer (0.5 to 3.0 sec. in 0.5 sec. steps) that keeps on transmitting after you stop speaking.
• In case of setting to 0.5 (0.5 sec.), the VOX delay sets to short.
• In case of setting to 3.0 (3.0 sec.), the VOX delay sets to long.

VOX delay 1.0 (default)

Push

VOX delay 3.0
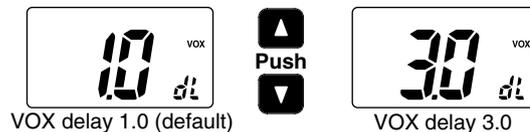
SET MODE LIST

Function	Indication	Switch
Beep tone function	"bP"	OFF/ON*/US
Monitor switch action	"Sq"	Push*/Hold
LCD contrast selection	"LC"	1/2/3*/4
Self check function	"SC"	OFF*/ON
Battery voltage indicator	"bt"	OFF*/ON
Signal strength indicator	"SI"	OFF*/ON
Squelch sensitivity	"SS"	OFF*/ON
VOX gain	"ga"	1/2/3*/4/5/6
VOX delay	"dL"	0.5/1.0*/1.5/2.0/2.5/3.0

*default setting

5

6 BP-234 LITHIUM BATTERY PACK

The IC-GM1600E is certified as a GMDSS survival craft portable radio ONLY when used with the BP-234 Lithium battery pack.
For reasons of shelf-life and air cargo regulations, the BP-234 Lithium battery pack is listed as an option but its use in GMDSS applications is mandatory.

Always ensure the sufficient BP-234 Lithium battery packs are available for use in any distress situation and their sealed bag are intact and that their shelf-life has not expired.

The BP-234 Lithium battery pack is not rechargeable and must be replaced after any use.

The following precautions must be observed.

• **NEVER** dispose of the BP-234 Lithium battery pack in a fire. This could result in a fire or explosion.

• **DO NOT** short-circuit the BP-234 Lithium battery pack. Metal contact (such as paper clip, another battery, etc.) across the battery contacts can result in a sustained high rate discharge, which could damage the battery, void the warranty and create a burn or a fire hazard.

• **NEVER** expose of the BP-234 Lithium battery pack to excessive heat of 60°C or above. This could result in electrolyte leakage, possibly causing an explosion or fire.

• **NEVER** attempt to recharge the BP-234 Lithium battery pack. Lithium batteries may explode or cause a fire in such cases.

• **DO NOT** disassemble the BP-234 Lithium battery pack. The BP-234 Lithium battery pack contains no user serviceable parts. Internal battery gas can cause throat irritation. Also, exposed lithium may generate heat and ignite.

• **DO NOT** apply excessive pressure to the battery. This may result in electrolyte leakage, possibly causing a explosion or fire.

• The storage life of the BP-234 Lithium battery pack is about 5 years. Once the expiration date on the battery pack expires, a new battery pack **must** be used.

• For safety reasons, once the BP-234 Lithium battery pack is used, a spare one should be purchased. The original battery pack can be continued to be used for regular communications; save the spare one for emergency situations.
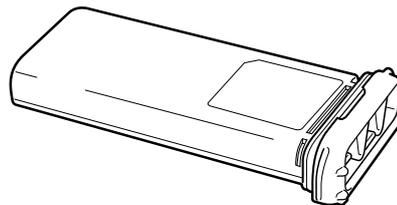

• BP-234 Lithium battery pack

IMPORTANT:
• This battery pack uses for **EMERGENCY ONLY**.
• Usable temperature range is within –20°C to +55°C.
• Stored temperature range is within –30°C to +35°C.
• Once this bag's seal is broken, a new emergency battery pack must be used for EMERGENCY use.

■ Important! (Except China version)

Attach the supplied ferrite core to the AC adapter as follow before charging the battery.

AC adapter
Approx. 2 cm
1 loop
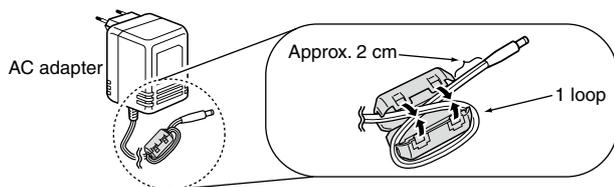
■ Battery charging

Prior to using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation.

CAUTION: To avoid damage to the transceiver, turn the power OFF while charging.

• Recommended temperature range for charging:
  BP-224*[1] is 10°C to 40°C; BP-252*[2] is 0°C to 45°C.
• Use the specified chargers (BC-158*[1], BC-173*[2]). **NEVER** use another manufacture's charger.
• Use the supplied AC adapter. **NEVER** use another manufacture's adapters.

*[1]China version only, *[2]Except China version.

Turn the transceiver OFF when charging an attached battery pack. Otherwise, the battery pack may not become full-charging or may not charge properly.

■ Battery cautions

CAUTION! NEVER insert battery pack/transceiver (with the battery pack attached) with wet or soiled into the charger. This may result in corrosion of the charger terminals or damage to the charger. The charger is not waterproof and water can easily get into it.

NEVER incinerate used battery packs. Internal battery gas may cause an explosion.

NEVER immerse battery pack in water. If the battery pack becomes wet, be sure to wipe it dry immediately (particularly the battery terminals BEFORE attaching it to the transceiver).

NEVER short terminals of the battery pack. Also, current may flow into nearby metal objects, such as a necklace, etc. Those may cause burn, electric shock or fire. Therefore, be careful when carrying in a pocket, backpack or handbag, and when placing the radio near metal objects.

If your battery pack seem to have no capacity even after being charged, completely discharge it by leaving the power ON overnight. Then, fully charge the battery pack again. If the batteries still do not retain a charge (or very little), new battery pack must be purchased.

◇ Charging connections for BP-224 (China version only)

① Attach the BC-158 to a flat surface, such as a desk.
② Connect the AC adapter as shown below.
③ Insert the battery pack with/without the transceiver into the charger.
  • The charge indicator lights green.
④ Charge the battery pack approx. 8 hours, depending on the remaining power condition.

  ⚠ **DO NOT** charge the BP-224 more than 12 hours. Otherwise, the BP-224 will be damaged.

Turn power OFF ⎯⎯ IC-GM1600E

BP-224

Charge indicator lights green when the battery pack (with/without the transceiver) is inserted.

AC adapter

Supplied screws

BC-158
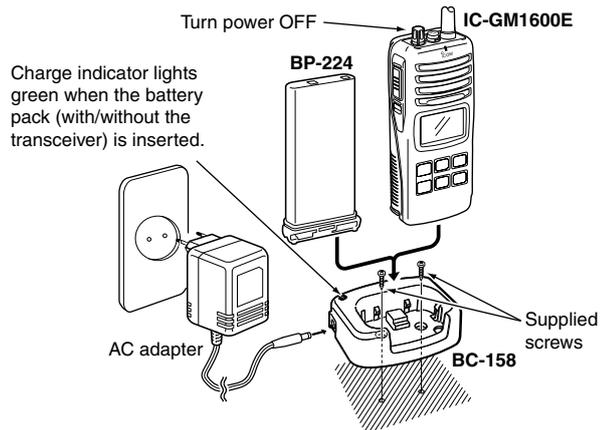
◇ Changing connections for BP-252 (Except China version)

① Attach the supplied ferrite core to the AC adapter. (p. 17)
② Attach the BC-173 to a flat surface, such as a desk.
③ Connect the AC adapter as shown right.
④ Insert the battery pack with/without the transceiver into the charger.
  • The charger indicator lights orange.
  • The charger indicator blinks orange (or orange/green alternately) when the protector is activated.
⑤ Charge the battery pack approx. 10 hours, depending on the remaining power condition.
  • The charger indicator lights green when charging is completed.

  ⚠ **NOTE:** The battery charger, BC-173, has a charging timer. The timer stops the charging process after 14 hours (approx.).

Turn power OFF ⎯⎯ IC-GM1600E

BP-252

Charge indicator lights orange when the battery pack (with/without the transceiver) is inserted.

AC adapter

Supplied screws

BC-173
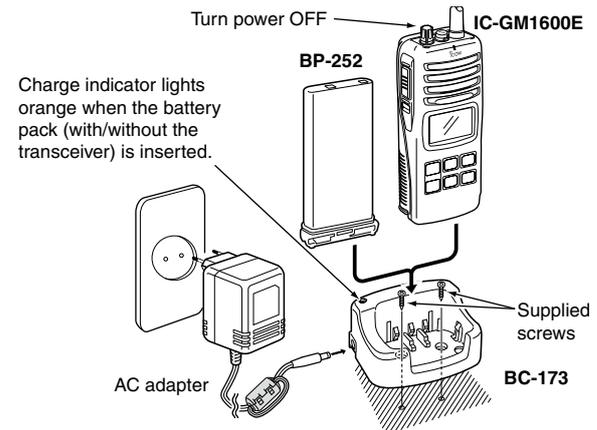
OPTIONAL SPEAKER-MICROPHONE (FOR ON-BOARD USE ONLY)

■ HM-125 description

Alligator type clip
To attach the
speaker-microphone
to your shirt or collar, etc.

PTT switch
Transmits during push.
Receives during release.

Microphone

Speaker
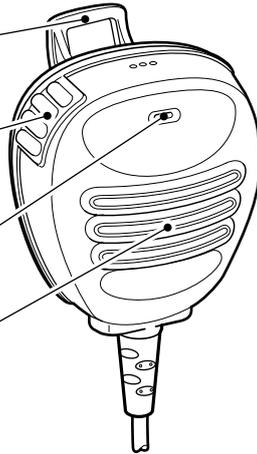
NEVER immerse the connector in water without connecting with the transceiver. If the connector becomes wet, be sure to dry BEFORE connecting it to the transceiver.

NOTE: The microphone is located at the top of the speaker-microphone, as shown in the diagram above. To maximize the readability of your transmitted signal (voice), hold the microphone approx. 5 to 10 cm from your mouth, and speak in a normal voice level.

■ Attachment

Insert the speaker-microphone's connector on to the [MIC/SP] connector and carefully screw it tight, as shown in the diagram below. Be careful not to cross thread the connection.

Set the triangle mark to the front side.
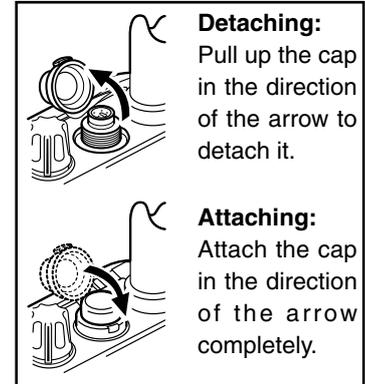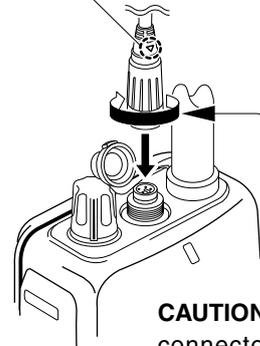
Detaching:
Pull up the cap in the direction of the arrow to detach it.

Attaching:
Attach the cap in the direction of the arrow completely.

CAUTION: Attach the speaker-microphone's connector securely to prevent accidental dropping, or water intrusion in the connector.

IMPORTANT: KEEP the transceiver's [MIC/SP] connector cap attached when the speaker-microphone is not in use. Water will not get into the transceiver even if the cover is not attached, however, the terminals (pins) will become rusty, or the transceiver will function abnormally if the connector has become wet.

9 SURVIVAL CHANNEL LIST

Channel number	TX/RX	Channel number	TX/RX	Channel number	TX/RX
06	156.300 MHz	08	156.400 MHz	09	156.450 MHz
10	156.500 MHz	11	156.550 MHz	12	156.600 MHz
13	156.650 MHz	14	156.700 MHz	15	156.750 MHz
16	156.800 MHz	17	156.850 MHz	67	156.375 MHz
68	156.425 MHz	69	156.475 MHz	71	156.575 MHz
72	156.625 MHz	73	156.675 MHz	74	156.725 MHz
77	156.875 MHz				

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
The transceiver does not turn ON.	• The battery is exhausted. • Bad connection to the battery pack.	• Change the new battery pack (Survival). • Recharge the battery pack (On-board). • Check the connection to the transceiver.	p. 16 pgs. 17 and 18 p. 3
No sound from the speaker.	• Squelch level is too deep. • Volume level is too low. • Speaker has been exposed to water. • Water has entered to the [MIC/SP] connector.	• Set squelch to the threshold point. • Rotate [VOL] to set a suitable level. • Drain water from the speaker. • Dry the [MIC/SP] connector.	p. 9 p. 8 — —
Transmitting is impossible, or high power can not be selected.	• The battery is exhausted. • The output power is set to low.	• Change the new battery pack (Survival). • Recharge the battery pack (On-board). • Push [Hi/Lo• ▼–O] to select high power.	p. 16 pgs. 17 and 18 p. 8
The displayed channel cannot be changed.	• Lock function is activated.	• Push [Hi/Lo• ▼–O] for 1 sec. to cancel the function.	p. 10
No beeps.	• Beep tones are turned OFF.	• Set the beep tones to ON (Fix Beep/User Beep) on the SET mode.	p. 12
Self check error. (Temperature)	• The temperature is outside of −35°C to +80°C (approx.).	• Leave the transceiver at room temperature for a while. Turn the power ON to check if the internal temperature has returned to normal.	—
Self check error. (Battery voltage)	• The connected battery pack's voltage is more than 11 V.	• Verify the battery voltage is correct.	—
Transmitting continuously while not speaking when using VOX function.	• Ambient noise is too loud.	• Remove the headset cable. • Set the VOX gain to dulling.	p. 14

11 SPECIFICATIONS

◊ GENERAL

- Frequency coverage
  TX/RX   : 156.300–156.875 MHz
- Mode   : 16K0G3E
- Channel spacing   : 25 kHz
- Power supply requirement   :
  - <For Survival craft>   BP-234
  - <For on-board use>   BP-224 (China version only)
    BP-252 (Except China version)
- Current drain (at 7.2 V DC)   : TX High (2 W) 1.0 A typical
  Max. audio   200 mA typical
- Useable temperature range   : –20°C to +55°C
- Frequency stability   : ±1.5 kHz (–20°C to +55°C)
- Antenna impedance   : 50 Ω
- Dimensions   : 65(W) × 145(H) × 44(D) mm
  (Projections not included)
- Weight (with BP-234)   : Approx. 385 g

◊ TRANSMITTER

- Output power (at 7.2 V DC)   : 2 W (High) and 1 W (Low)
- Modulation system   : Variable reactance frequency
  modulation
- Microphone impedance   : 2 kΩ
- Max. frequency deviation   : ±5 kHz
- Adjacent channel power   : 70 dB
- Spurious emissions   : 0.25 µW (below 1 GHz)
  1 µW (above 1 GHz)

◊RECEIVER

- Receive system   : Double-conversion
  superheterodyne
- Sensitivity (20 dB SINAD)   : –2 dBµ EMF (typical)
- Squelch sensitivity   : 0 dBµ EMF (typical)
  (at threshold)
- Intermodulation rejection ratio : 68 dB
- Spurious response rejection ratio : 70 dB
- Adjacent channel selectivity   : 70 dB
- Audio output power   : 0.20 W at 10% distortion with
  an 8 Ω load

NOTE: Measurements in according to IEC61097-12.

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

◇ BATTERY PACKS

<FOR SURVIVAL CRAFT>

• **BP-234** Lithium battery pack
  Voltage   : 9.0V
  Capacity   : 3300 mAh

<FOR ON-BOARD USE>
(For China version only)

• **BP-224** Ni-Cd battery pack
  Voltage   : 7.2V
  Capacity   : 750 mAh

• **BP-225** Ni-Cd battery pack
  Voltage   : 7.2V
  Capacity   : 1100 mAh

(For except China version)

• **BP-252** Li-ion battery pack
  Voltage   : 7.4V
  Capacity   : 950 mAh (minimum) / 980 mAh (typical)

◇ BELT CLIPS

• **MB-103Y** BELT CLIP
  The same as supplied with the transceiver.

◇ OTHER OPTIONS

<FOR ON-BOARD USE ONLY>

• **HM-125** SPEAKER-MICROPHONE
  Full sized speaker-microphone including an alligator clip to attatch the microphone to your shirt, collar, etc. The HM-125 meets IPX7 requirements for waterproof protection. However, once it has been dropped, the IP rating cannot be guaranteed because of possible damage to it's case of the waterproof seal.

◇ CHARGERS

<FOR ON-BOARD USE ONLY>

(For China version only)

• **BC-158** DESKTOP CHARGER **+ BC-147S** AC ADAPTER
  Used for regular charging of battery pack. The same as supplied with the transceiver.
  Charging time: approx. 8 hours.

(For except China version)

• **BC-173** DESKTOP CHARGER **+ BC-147S** AC ADAPTER
  Used for regular charging of battery pack. The same as supplied with the transceiver.
  Charging time: approx. 10 hours.

Icom optional equipment are designed for optimal performance when used with this transceiver. We are not responsible for the transceiver being damaged or any accident caused when using non-Icom optional equipment.

11

12

Different versions of this radio use different options. Ask your authorized dealers for details.

MEMO

Important operating instructions are summed up in this and the following page for your simple reference.

By cutting along the line and folding on the dotted line, it will become a card sized operating guide which can easily be carried in a card case or wallet, etc.

① Cut ② Fold ③ Complete

25

— CUT HERE —
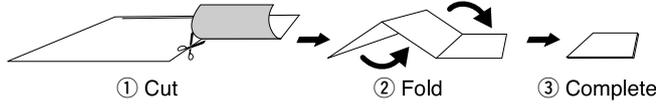
■ CALL CHANNEL PROGRAMMING (p. 9)

① Push [CALL] to select the call channel.
 • "CALL" and call channel number appear.

② Push [CALL] again for 3 sec. (until long beep changes to 2 short beeps) to enter call channel programming condition.
 • Call channel number to be programmed flashes.

③ Push [▲]/[▼] to select the desired channel.

④ Push [CALL] to program the displayed channel as the call channel.
 • The call channel number stop flashing.
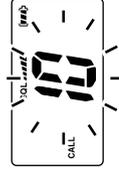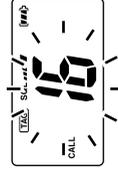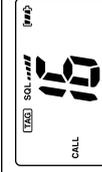
ICOM OPERATION GUIDE
IC-GM1600E

■ IN CASE OF EMERGENCY

○ USING CHANNEL 16

DISTRESS CALL PROCEDURE

1. "MAYDAY MAYDAY MAYDAY."

2. "THIS IS (name of vessel)"

3. Your call sign or other indication of the vessel.

4. "LOCATED AT (your position)"

5. The nature of the distress and assistance required.

6. Any other information which might facilitate the rescue.

■ **SET MODE** (pgs. 11–15)

① While pushing [SQL•MON], turn power ON.
② Push [SQL•MON] again to select an item.
③ Push [▲]/[▼] to select the desired condition.
④ Push [16] to return to regular operating mode.

On bP

Refer to pgs. 11–15 for set mode item.

■ **SET MODE LIST** (p. 15)

Function	Indication	Switch
Beep tone function	"bP"	OFF/ON*/US
Monitor switch action	"Sq"	Push*/Hpld
LCD contrast selection	"LC"	1/2/3*/4
Self check function	"SC"	OFF*/ON
Battery voltage indicator	"bt"	OFF*/ON
Signal strength indicator	"SI"	OFF*/ON
Squelch sensitivity	"SS"	OFF*/ON
VOX gain	"ga"	1/2/3*/4/5/6
VOX delay	"dL"	0.5/1.0*/1.5/2.0/2.5/3.0

*default setting

MEMO

Count on us!

Icom Inc.
1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan