



Draft

INSTRUCTION MANUAL

VHF MARINE TRANSCEIVER
IC-M94D

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

Icom Inc.

Thank you for choosing this Icom product. This product was 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-M94D.

This instruction manual includes some functions that are usable only when they are preset by your dealer. Ask your dealer for details.

■ Features

■ Explicit definitions

WORD	DEFINITION
⚠ DANGER!	Personal death, serious injury or an explosion may occur.
⚠ 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.

■ Définitions explicites

TERME	DÉFINITION
⚠ DANGER !	Risque d'accident mortel, de blessures corporelles graves ou d'explosion.
⚠ AVERTISSEMENT!	Risque de blessures corporelles, d'incendie ou de choc électrique.
MISE EN GARDE	Risque de dégât matériel.
REMARQUE	Inconvénient seulement, en cas de nonrespect. Absence de risque de blessures corporelles, d'incendie ou de choc électrique.

Icom is not responsible for the destruction, damage to, or performance of any Icom or non-Icom equipment, if the malfunction is because of:

- Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightning, other natural disasters, disturbances, riots, war, or radioactive contamination.
- The use of Icom transceivers with any equipment that is not manufactured or approved by Icom.

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AquaQuake is a trademark of Icom Incorporated.

All other products or brands are registered trademarks or trademarks of their respective holders.

■ In case of emergency

If your vessel requires assistance, contact other vessels and the Coast Guard by sending a distress call on Channel 16, or, transmit your Distress call using Digital Selective Calling (DSC) on Channel 70.

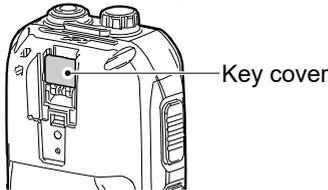
◇ USING CHANNEL 16

1. Push [16/C] to switch to Channel 16.
2. While holding down [PTT], give the appropriate information as follows:

- “MAYDAY MAYDAY MAYDAY.”
- “THIS IS []” (name of vessel).
- Say your call sign or other indication of the vessel (AND your 9 digit DSC ID, if you have one).
- “LOCATED AT []” (your position).
- State the nature of the distress and assistance required.
- Give any other information which might facilitate the rescue.

◇ USING DIGITAL SELECTIVE CALLING

1. Lift up the key cover, hold down [DISTRESS] for 3 seconds until the 3 short beeps and then one long beep sound.



2. Wait for an acknowledgment from another station.
3. After the acknowledgement is received, Channel 16 is automatically selected.
4. Hold down [PTT], then transmit the appropriate information as listed above.

■ Recommendation

CLEAN THE TRANSCEIVER THOROUGHLY IN A BOWL OF FRESH WATER after exposure to saltwater, and dry it before operating. Otherwise, the transceiver's keys and switches may become unusable, due to salt crystallization.

NOTE: If the transceiver's waterproof protection appears defective, carefully clean it with a soft, damp (fresh water) cloth, then dry it before operating. The transceiver may lose its waterproof protection if the case, jack cap, or connector cover, or battery cover is cracked or broken, or the transceiver has been dropped. Contact your Icom distributor or your dealer for advice.

■ PRECAUTIONS

⚠ **DANGER! NEVER** operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere. This could cause an explosion and death.

⚠ **WARNING! NEVER** use or charge Icom battery packs with non-Icom transceivers or non-Icom chargers. Only Icom battery packs are tested and approved for use with Icom transceivers or charged with Icom chargers. Using third-party or counterfeit battery packs or chargers may cause smoke, fire, or cause the battery to burst.

⚠ **WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting.

⚠ **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. The continuous high volume operation may cause a ringing in your ears. If you experience the ringing, reduce the volume level or discontinue use.

CAUTION: DO NOT short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects such as a key, so be careful when placing the battery packs (or the transceiver) in bags, and so on. Carry them so that shorting cannot occur with metal objects. Shorting may damage not only the battery pack, but also the transceiver.

CAUTION: DO NOT use harsh solvents such as Benzine or alcohol when cleaning. This could damage the equipment surfaces. If the surface becomes dusty or dirty, wipe it clean with a soft, dry cloth.

CAUTION: DO NOT place or leave the transceiver in excessively dusty environments. This could damage the transceiver.

NOTE: DO NOT place or leave the transceiver in direct sunlight or in areas outside of the specified temperature range: -20°C (-4°F) \sim $+60^{\circ}\text{C}$ ($+140^{\circ}\text{F}$)
Keep the transceiver in a secure place to prevent use by unauthorized persons.

BE CAREFUL! The transceiver meets IPX7 requirements for waterproof protection. However, once the transceiver has been dropped, waterproof protection cannot be guaranteed due to the fact that the transceiver may be cracked, or the waterproof seal damaged, and so on.

* Only when the supplied battery pack or case, antenna, and jack cover are attached.

Information:

In this instruction manual, the transceiver version names are described as shown below.

U.S.A.: USA Export: EXP

■ PRÉCAUTIONS

⚠ **DANGER ! NE JAMAIS** utiliser l'émetteur-récepteur à proximité de détonateurs électriques non blindés ou dans une atmosphère explosive. Cela pourrait causer une explosion mortelle.

⚠ **AVERTISSEMENT !** N'utilisez **JAMAIS** et ne rechargez **JAMAIS** des blocsbatteries Icom avec des émetteurs-récepteurs non-Icom ou des chargeurs non-Icom. Seuls les blocsbatteries Icom sont testés et homologués pour être utilisés avec des émetteurs-récepteurs Icom ou pour être rechargés avec des chargeurs Icom. L'utilisation de blocsbatteries ou de chargeurs tiers ou de contrefaçon peut être à l'origine de fumées, d'incendie ou peut faire éclater la batterie.

⚠ **AVERTISSEMENT ! NE JAMAIS** l'émetteur-récepteur de sorte que l'antenne soit très proche des parties exposées du corps, en particulier du visage ou des yeux, et ne les touche pas pendant la transmission.

⚠ **AVERTISSEMENT !** N'utilisez **JAMAIS** l'émetteur-récepteur avec un casque ou d'autres accessoires audio à des niveaux de volume élevés. Le fonctionnement continu à volume élevé peut provoquer une sonnerie dans vos oreilles. Si vous ressentez la sonnerie, réduisez le volume ou cessez d'utiliser.

MISE EN GARDE : NE PAS court-circuiter les bornes de la batterie. Un court-circuit peut se produire si les bornes touchent des objets métalliques tels qu'une clé. Soyez donc prudent lorsque vous placez les batteries (ou l'émetteur-récepteur) dans des sacs, etc. Transportez-les de manière à ce qu'il n'y ait pas de court-circuit avec des objets métalliques. Un court-circuit peut endommager non seulement la batterie, mais également l'émetteur-récepteur.

MISE EN GARDE : NE PAS utiliser de dissolvants agressifs tels que du Benzène ou de l'alcool lors du nettoyage, car ils endommageraient les surfaces de l'émetteur-récepteur. Si l'émetteur-récepteur est poussiéreux ou sale, nettoyez-le avec un tissu doux et sec.

MISE EN GARDE : NE PAS placer l'émetteur-récepteur dans des environnements excessivement poussiéreux. Cela pourrait endommager l'émetteur-récepteur.

REMARQUE : NE PAS placer ou laisser l'émetteur-récepteur en plein soleil ou dans un environnement soumis à des températures inférieures à -20°C (-4°F) ou supérieures à $+60^{\circ}\text{C}$ ($+140^{\circ}\text{F}$). Placez l'émetteur-récepteur dans un lieu sûr pour éviter toute utilisation par des personnes non autorisées.

MISE EN GARDE : Cet émetteur-récepteur répond aux exigences de la norme IPX7 en matière de protection étanche. Cependant, en cas de chute de l'émetteur-récepteur, la protection étanche ne peuvent plus être garanties, car le boîtier risque d'être fissuré ou le joint d'étanchéité endommagé, etc.
* Uniquement lorsque la batterie ou le boîtier, l'antenne et le cache-prise sont fixés.

■ Safety training information



Your Icom radio generates RF electromagnetic energy while transmitting. This radio is designed for and classified as for “Occupational Use Only.” This means it must be

used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the “General Population” in an uncontrolled environment. This radio has been tested and complies with the FCC and IC RF exposure limits for “Occupational Use Only”. In addition, your Icom radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- FCC KDB Publication 447498 D03, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-2019), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 0 Hz to 300 GHz.
- American National Standards Institute (C95.3-2002), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields— RF and Microwave.
- The accessories listed on page ?? are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC and IC requirements for wireless RF exposure.
- Health Canada Safety Code 6 - Limits of Human Exposure to Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz.



To ensure that your exposure to RF electromagnetic energy is within the FCC and IC allowable limits for occupational use, always adhere to the following guidelines:

- **DO NOT** operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC and IC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio.
- **DO NOT** transmit for more than 50% of the total radio use time (“50% duty cycle”). Transmitting more than 50% of the time can cause FCC and IC RF exposure compliance requirements to be exceeded. The radio is transmitting when “TX” is displayed on the function display. You can cause the radio to transmit by pushing the “PTT” switch.
- **ALWAYS** keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting, and only use the Icom belt-clips listed on page ?? when attaching the radio to your belt, or other place, to ensure FCC and IC RF exposure compliance requirements are not exceeded.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates within the FCC and IC RF exposure limits of this radio.

Electromagnetic Interference/ Compatibility

During transmissions, your Icom radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **DO NOT** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use

The radio transmitter is used in situations in which persons are exposed as a consequence of their employment, provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

■ Infomation en matière de sécurité



AVERTISSEMENT

Votre radio Icom produit une énergie électromagnétique de radiofréquences (RF), en mode de transmission. Cette radio est conçue pour un «usage professionnel seulement» et classée comme tel, ce qui signifie qu'elle doit être utilisée uniquement dans le cadre d'un travail par des personnes conscientes des dangers et des mesures visant à minimiser ces dangers. Elle N'EST PAS conçue pour une «utilisation grand public», dans un environnement non contrôlé. Cet appareil a été évalué et jugé conforme, aux limites d'exposition aux RF de la FCC et d'IC, pour une «utilisation grand public». En outre, votre radio Icom satisfait les normes et directives qui suivent en matière de niveaux d'énergie et d'énergie électromagnétique de RF et d'évaluation de tels niveaux en ce qui concerne l'exposition humaine:

- Publication 447498 D03 de la FCC KDB, «Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields».
- Norme de l'American National Standards Institute (ANSI): IEEE C95.1-2019 sur les niveaux de sécurité compatibles avec l'exposition humaine aux champs électromagnétiques de radiofréquences (0 Hz à 300 GHz).
- Norme de l'ANSI: IEEE C95.3-2002 sur la méthode d'évaluation recommandée du champ magnétique potentiellement dangereux des radiofréquences et des micro-ondes.
- Les accessoires illustrés à la p. ?? sont approuvés pour une utilisation avec ce produit. L'utilisation d'accessoires autres que ceux précisés peut entraîner des niveaux d'exposition aux RF supérieures aux limites établies par la FCC et d'IC en matière d'exposition aux RF sans fil.
- Le Code de sécurité 6 de Santé Canada - Les limites d'exposition humaine à l'énergie électromagnétique dans la gamme de fréquences de 3 kHz à 300 GHz.

Afin de vous assurer que votre exposition à une énergie électromagnétique de RF se situe dans les limites permises par la FCC pour une utilisation grand public, veuillez en tout temps respecter les directives suivantes :



MISE EN GARDE

- **NE PAS** faire fonctionner la radio sans qu'une antenne appropriée y soit fixée, car ceci risque d'endommager la radio et causer une exposition supérieure aux limites établies par la FCC. L'antenne appropriée est celle qui est fournie avec cette radio par le fabricant ou une antenne spécialement autorisée par le fabricant pour être utilisée avec cette radio.
- **NE PAS** émettre pendant plus de 50% du temps total d'utilisation de l'appareil («50% du facteur d'utilisation»). Émettre pendant plus de 50% du temps total d'utilisation peut causer une exposition aux RF supérieure aux limites établies par la FCC. La radio est en train d'émettre lorsque le témoin du "TX" s'affiche sur l'écran ACL. La radio émettra si vous appuyez sur le bouton du microphone.
- **TOUJOURS** tenir l'antenne éloignée d'au moins 2,5 cm de votre corps au moment d'émettre et utiliser uniquement l'attache pour ceinture Icom illustrée à la p. ??, lorsque vous attachez la radio à votre ceinture, ou à autre chose, de façon à vous assurer de ne pas provoquer une exposition aux RF supérieure aux limites fixées par la FCC. Pour offrir à vos interlocuteurs la meilleure qualité de transmission possible, tenez l'antenne à au moins 5 cm de votre bouche et légèrement de côté.

Les renseignements ci-dessus fournissent à l'utilisateur toute l'information nécessaire sur l'exposition aux RF et sur ce qu'il faut faire pour assurer que cette radio fonctionne en respectant les limites d'exposition aux RF établies par la FCC.

Interférence électromagnétique et compatibilité

En mode de transmission, votre radio Icom produit de l'énergie de RF qui peut provoquer des interférences avec d'autres appareils ou systèmes. Pour éviter de telles interférences, mettez la radio hors tension dans les secteurs où une signalisation l'exige. **NE PAS** faire fonctionner l'émetteur dans des secteurs sensibles au rayonnement électromagnétique tels que les hôpitaux, les aéronaves et les sites de dynamitage.

Usage professionnel/contrôle

Ce radio émetteur est utilisé dans des cas où des personnes sont exposées en raison de leur travail, pourvu qu'elles soient conscientes du risque d'exposition et qu'elles puissent exercer un contrôle sur cette exposition.

■ FCC information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CAUTION: Changes or modifications to this transceiver, not expressly approved by Icom Inc., could void your authority to operate this transceiver under FCC regulations.

■ Information FCC

Cet équipement a été testé et reconnu conforme aux limites fixées pour un appareil numérique de classe A, conformément au point 15 de la réglementation FCC. Ces limites sont définies de façon à fournir une protection raisonnable contre le brouillage préjudiciable lorsque cet appareil est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre un rayonnement de fréquence radio. S'il n'a pas été installé conformément aux instructions, il peut par ailleurs créer des interférences perturbant les communications radio.

L'utilisation de cet appareil dans une zone résidentielle peut provoquer un brouillage préjudiciable, auquel cas l'utilisateur sera tenu de corriger la situation à ses frais.

MISE EN GARDE: Tout changement ou modification, non expressément approuvé par Icom Inc., peut annuler l'autorisation de l'utilisateur à utiliser cet appareil conformément à la réglementation FCC.

■ Table of contents

◇ 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

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 application. This government-issued license states 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 or kept with the operator. Only a licensed radio operator may operate a transceiver.

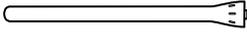
However, non-licensed individuals may talk over a transceiver if a licensed operator starts, supervises, ends the call and makes the necessary log entries.

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.

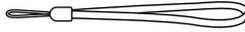
NOTE: Even though the IC-M94D/IC-M94DE is capable of operation on VHF marine channels 1021, 1023, 1081, 1082, and 1083, according to FCC regulations these simplex channels cannot be lawfully used by the general population in USA waters.

■ Supplied accessories

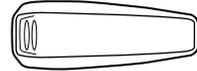
Antenna



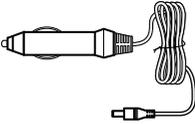
Handstrap



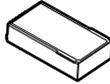
Belt clip



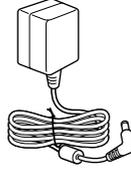
Cigarette lighter cable



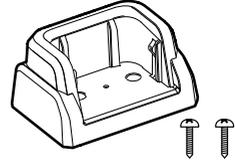
Battery pack



Power adapter
(For Desktop charger)



Desktop charger
(With 2 screws)



NOTE: Some accessories may not be supplied, or the shape may be different, depending on the transceiver version.

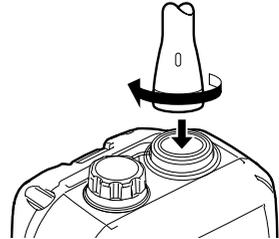
■ Attaching accessories

◇ Antenna

Connect the supplied antenna to the antenna connector.

CAUTION:

- **DO NOT** carry the transceiver by holding only the antenna.
- **DO NOT** connect an antenna other than those listed in this instruction manual.
- **DO NOT** transmit without an antenna.



◇ Belt clip

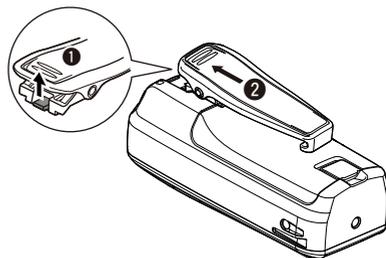
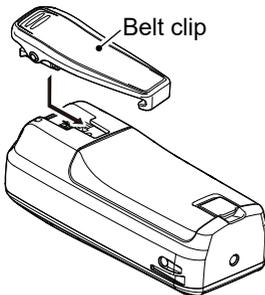
To attach:

Slide the belt clip in the direction of the arrow until the belt clip is locked and makes a 'click' sound.

To detach:

Lift the tab up (1), and slide the belt clip in the direction of the arrow (2).

BE CAREFUL! DO NOT break your fingernail.



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- 17
- 18

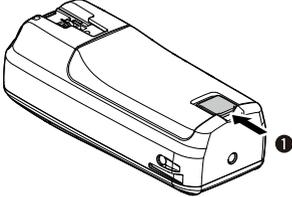
2 ACCESSORIES

■ Attaching accessories

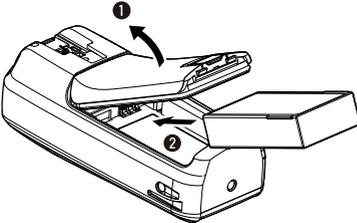
◇ Battery pack

To insert:

1. Push the sliding lock (❶).



2. Open the battery cover (❶), and place the battery pack into the transceiver so it fits flat (❷).



3. Securely attach the battery cover.

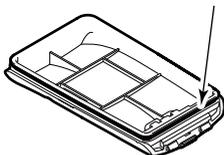
To remove:

Push the sliding lock, and then lift the battery cover to remove it. Then remove the battery pack.

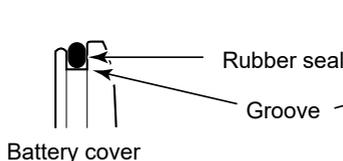
CAUTION:

- **NEVER** remove the battery cover when the transceiver is wet or soiled. This may result in water or dust getting into the transceiver/battery pack, and may result in the transceiver being damaged.
- When attaching or removing the battery cover, make sure the rubber seal is correctly set in the groove of the cover. If the seal is not correctly in the groove, it may be damaged when attaching the battery cover. If the seal is damaged, waterproof protection is not guaranteed.
- When attaching the battery cover, make sure dust or other material does not adhere to the rubber seal. If dust or other material is on the seal when attaching the battery cover, waterproof protection may not be guaranteed.

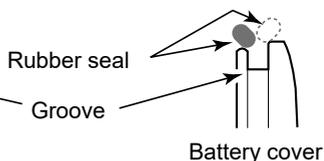
Be sure that the rubber seal is correctly seated in the groove, and there is no dust or other material on it.



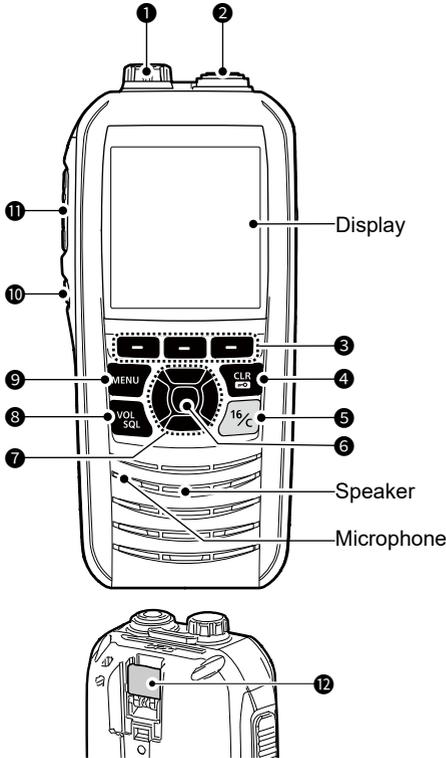
Correct position



Incorrect position



■ Panel description



1 SPEAKER MICROPHONE JACK

(p. ??)

Connects the optional external speaker microphone.

NOTE: Attach the jack cover when the optional speaker microphone is not used. Otherwise, water will get into the transceiver.

2 ANTENNA CONNECTOR (p. ??)

Connects the supplied antenna.

3 SOFTWARE KEYS (p. ??)

Scroll the key functions by pushing [◀] or [▶], and then push either of the 3 software keys to select the function displayed at the bottom of the display.

4 CLEAR/LOCK KEY [CLR/☐]

- Push to cancel the entered data, or to return to the previous screen.
- Hold down for 1 second to turn the Key Lock function ON or OFF. (p. ??)

5 CHANNEL 16 KEY [16/C]

- Push to select Channel 16. (p. ??)
- Hold down for 1 second to select the Call channel. (p. ??)

6 ENTER KEY

Push to set the entered data, selected item, and so on.

7 UP/DOWN/LEFT/RIGHT KEYS

[▲]/[▼]/[◀]/[▶]

- Push [▲] or [▼] to select the operating channel, Menu items, Menu settings, and so on.
- Push [◀] or [▶] to scroll the Software key functions. (p. ?)
- Push to select a character or number in the entry mode. (pp. ??, ??)

8 VOLUME/SQUELCH/MONITOR KEY [VOL/SQL]/[MONI]

- Push once to display the volume level setting screen. (p. ??)
- Push twice to display the squelch level setting screen. (p. ??)
- Hold down for 1 second to turn ON the Monitor function. (p. ??)

9 MENU KEY

Push to display or close the Menu screen.

10 POWER KEY [⏻]

Hold down for 1 second to turn the transceiver ON or OFF.

11 PTT SWITCH [PTT]

Hold down to transmit, release to receive.

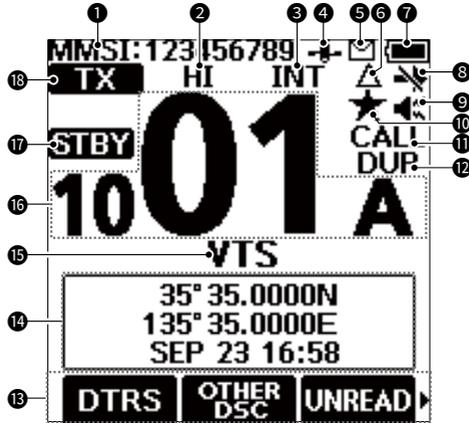
12 DISTRESS KEY [DISTRESS]

Hold down for 3 seconds to transmit a Distress call.

1
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3 PANEL DESCRIPTION

■ Display description



1 MMSI CODE (p. ??)

Displays the entered MMSI code.

2 POWER INDICATOR (p. ??)

- “HI”: Displayed when high power is selected.
- “LOW”: Displayed when low power is selected.

3 CHANNEL GROUP INDICATOR

Displays the selected channel group, INT (International), USA, CAN (Canada), WX (Weather channel).

- ① The selectable channels may differ, depending on the version or presetting.
- ① When the WX Alert is set to ON, “WX” is displayed.

4 GPS ICON

- Displayed when valid GPS position data is received.
- Blinds while no position data is received.

5 MAIL ICON (p. ??)

- Displayed when there is an unread DSC message.
- Blinks until one of the called messages is read.

6 CPA/TCPA ICON

Displayed when there is a target in the CPA/TCPA alarm area. (p. ??)

7 BATTERY INDICATOR

Displays the battery’s remaining power.

Indication	Battery level
	Full
	Mid
	Charging required
	Battery exhausted

- ① blinks when the battery is overcharged (or over voltage).

8 DSC SWITCH ICON (p. ??)

- Displayed when the “CH Auto Switch” is set to “Ignore” or “Manual”
- Blinds when the “DSC Switch” is OFF.

9 LOUD/MUTE INDICATOR (p. ??)

- Displays when the audio volume level is set to “Loud.”
- Displays when the audio volume level is set to “Mute.”

10 FAVORITE CHANNEL ICON (p. ??)

Displayed when a Favorite channel is selected.

11 CALL CHANNEL ICON (p. ??)

Displayed when a Call channel is selected.

12 DUPLEX CHANNEL ICON

Displayed when a Duplex channel is selected.

13 SOFTWARE KEY FUNCTION

DISPLAY (pp. ??)

The functions of each keys are displayed.

- ① “Key Locked” is displayed while the Lock function is ON.

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14 POSITION/TIME READOUTS

Readouts the current position and time when valid GPS data is received, or when manually entered.

Received GPS data:

- “No Position No Time” is displayed if no GPS data is received for 2 minutes after turning ON the transceiver, and then a warning message is displayed.
 - “??” blinks if no GPS data is received for 30 seconds after receiving valid GPS data, and then “??” and a warning message are displayed alternately after 10 minutes.
 - A warning message is displayed if no GPS data is received for 4 hours after receiving valid GPS data.
- ① “Local” is displayed when the UTC Offset time is set. (p. ??)

Manually entered GPS data:

- A manually entered GPS data is valid for 4 hours, and then a warning message is displayed.
- ① “Manual” is displayed.

15 CHANNEL NAME

- The channel name is displayed, if entered. (p. ??)
- “SCAN” or “SCAN 16”:
Displayed while scanning. (p. ??)
- “DUAL 16” or “TRI 16”:
Displayed while using the Dualwatch or Tri-watch function. (p. ??)

16 OPERATING CHANNEL NUMBER

(pp. ??)
Displays the selected operating channel number.

17 STATUS INDICATOR

- STBY: Standby mode.
 - RT: Displayed while in the Radio Telephone (RT) mode.
- ① Returns to the Standby mode if no operation occurs during the preset period of time.
- DSC: Displayed while in the DSC mode.

18 STATUS INDICATOR (p. ??)

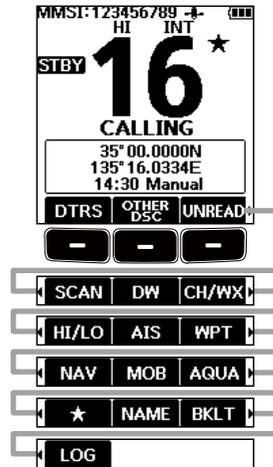
- TX: Displayed while transmitting.
- MONI: Displayed while the Monitor function is activated.
- BUSY: Displayed while receiving, or the squelch is open.

■ Software Keys

Various often-used functions are assigned to the Software Keys for easy access. The functions’ icons are displayed above the Software Keys, as shown below.

◇ Selecting a Software Key function

1. Push [◀] or [▶] to slide through the selectable functions that are assigned to the Software Keys.
2. Push the Software Key under the function’s icon to select the function.



NOTE:

- The displayed icons or their order may differ, depending on the transceiver version or the presetting. Ask your dealer for presetting details.
- When the MMSI code is not set, the Software Keys for the DSC function are not displayed.

3 PANEL DESCRIPTION

◇ Software key functions

Key	Function	Reference
DTRS Compose Distress	Push to display the "Compose Distress" screen to select the nature of distress, then push the [DISTRESS] (red key) to make a call. <i>NEVER MAKE A DISTRESS CALL IF YOUR SHIP OR A PERSON IS NOT IN AN EMERGENCY. A DISTRESS CALL SHOULD BE MADE ONLY WHEN IMMEDIATE HELP IS NEEDED.</i>	p. ?
OTHER DSC Other DSC	Push to compose an Individual call, Group call, All Ships call or a Test call.	p. ?
UNREAD Unread	Push to display the "Unread list" screen.	p. ?
SCAN Scan	Push to start or stop a Normal or Priority scan.	p. ?
DW / TW Dualwatch / Tri-watch	Push to start or stop Dualwatch or Tri-watch.	p. ?
CH/WX Channel/ Weather channel	Push to select regular channels or Weather channels. ① While the Call channel or Channel 16 is displayed, push this key to return to the regular channel mode.	p. ?
HI/LO High/Low	Push to set the output power to high or low. ① Some channels are set to only low power.	p. ?
AIS AIS	Push to display the AIS plotter screen.	p. ?
WPT Waypoint	Push to save your position information to the transceiver.	p. ?
NAV Navigation Stop Navigation	Push to start navigation. While navigating, push to stop navigation.	p. ?
MOB MOB Stop MOB	Push to start the Man Overboard (MOB) mode. While in the Man Overboard (MOB) mode, push to stop the Man Overboard (MOB) mode.	p. ?
AQUA AquaQuake	Hold down to turn ON the AquaQuake function to clear water from the speaker grill.	p. ?
★ Favorite channel	Push to select a Favorite channel. Hold down for 1 second to set the selected channel as a Favorite channel or clear it as a Favorite channel.	p. ?
NAME Channel Name	Push to edit the name of the displayed channel.	p. ?
BKLT Backlight	Push to display the backlight brightness adjustment screen. ① While in the adjustment mode, push [▲]/[▼][◀]/[▶] to adjust the brightness of the display and keys' backlight to between 1 and 7, or OFF.	p. ?
LOG LOG	Push to display the received call log or distress message log.	p. ?

■ Entering the MMSI code

The Maritime Mobile Service Identity (MMSI: DSC self ID) code consists of 9 digits. You can only enter the code when turning ON the transceiver for the first time.

This initial code entry can be done only once.

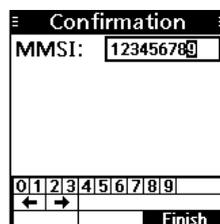
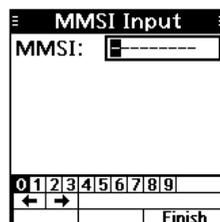
After entering, it can be changed only by your dealer or distributor. If your MMSI code has already been entered, this entry is not necessary.

- Hold down [⏻] to turn ON the transceiver.
 - Three short beeps sound, and “Push [ENT] to register your MMSI” is displayed.
- Push [ENT] to start entering the MMSI code.
 - The “MMSI Input” screen is displayed.
 - ① Push [CLR] twice to skip the entry.
 - If you skip the entry, you cannot make a DSC call. To enter the code after skipping, turn OFF the power, and then turn it ON again.
- Enter the MMSI code.

TIP:

- Select a number using [◀] and [▶].
- Push [ENT] to enter the selected number.
- Select “←” or “→,” to move the cursor.

- Repeat step 3 to enter all 9 digits.
- Select [Finish], and then push [ENT] to set the entered code.
 - The “Confirmation” screen is displayed.
- Enter your MMSI code again to confirm.
 - When a different code is entered from the “MMSI Input” screen, “MMSI does not match.” is displayed. Enter a code again in step 2.
- Select [Finish], and then push [ENT] to set the entered code.
 - ① When your MMSI code is successfully entered, “MMSI registered successfully.” is briefly displayed, and then enters the operating screen.
 - ② Your MMSI code is also displayed on the operating screen.



■ Selecting a channel

NOTE: Before using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation. To avoid damage to the transceiver, turn OFF the transceiver before charging.

◇ Regular Channel

You can select a channel by pushing [▲] or [▼].

◇ Channel 16

Channel 16 is the distress and safety channel. It is used to establish the initial contact with a station and for emergency communications. Channel 16 is monitored during both Dualwatch and Tri-watch. While in the standby mode, you must monitor Channel 16.

- Push [16/C] to select Channel 16.
 - ① To return to the previously selected channel, push [CHAN] or [CH/WX].



◇ Call channel

Each Channel Group has separate leisure-use Call channels. The Call channel is monitored during Tri-watch. The Call channels can be selected and used to store your most often used channel in each Channel Group, for quick recall.

- ① See page 13 for details on setting the Call channel.
- Hold down [16/C] for 1 second to select the Call channel.
 - The Call channel number and “CALL” are displayed.
 - ① To return to the previously selected channel, push [CHAN] or [CH/WX].



◇ Selecting a Channel Group

Channel Groups are preset into your transceiver. You can select the Channel Group between USA, International, Canadian, DSC, and ATIS depending on the transceiver version.

[MENU] > Settings > Radio > **Channel Group**

1. Push [MENU].
 - The Menu screen is displayed.
2. Push [▲] or [▼] to select “Settings,” and then push [ENT].
 - The “Settings” screen is displayed.
3. Push [▲] or [▼] to select “Radio” and then push [ENT].
 - The “Radio” screen is displayed.
4. Push [▲] or [▼] to select “Channel Group,” and then push [ENT].
 - The “Channel Group” screen is displayed.
5. Push [▲] or [▼] to select the Channel Group, and then push [ENT].
 - The transceiver returns to the previous screen.
 - ① The selected Channel Group’s icon is displayed on the operating screen.

Weather channels and Weather Alert

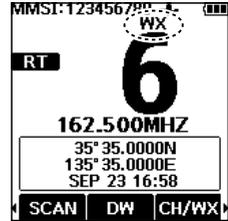
The USA and Export version transceivers have 10 preset Weather channels.

The transceivers are capable* of monitoring broadcasts from the National Oceanographic and Atmospheric Administration (NOAA). The transceiver automatically detects a Weather alert tone on the selected weather channel, or while scanning.

*When used within range of the broadcasts.

◇ Selecting a Weather channel

1. Push [CH/WX].
 - “WX” is displayed on the operating screen instead of the Channel Group.
2. Push [▲] or [▼] to select a Weather channel.



The Weather channel list

WX channel	Frequency (MHz)	WX channel	Frequency (MHz)
1	162.550	6	162.500
2	162.400	7	162.525
3	162.475	8	161.650
4	162.425	9	161.775
5	162.450	10	163.275

◇ Setting the Weather Alert

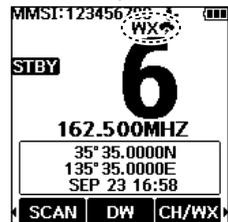
To receive the weather alert, set the WX Alert to “ON with Scan” or “ON.”

[MENU] > Settings > Radio > **WX Alert**

1. Push [MENU].
2. Push [▲] or [▼] to select “Settings,” and then push [ENT].
 - The “Settings” screen is displayed.
3. Push [▲] or [▼] to select “Radio,” and then push [ENT].
 - The “Radio” screen is displayed.
4. Select “WX Alert,” and then push [ENT].
 - The “WX Alert” screen is displayed.
5. Select “ON with Scan” or “ON.”
 - “” is displayed next to the weather channel icon.



- ① “WX” blinks until you push a key after detecting an alert.



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6 BASIC OPERATIONS

■ Adjusting the volume level

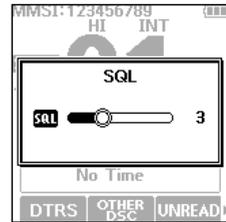
1. Push [VOL/SQL].
 - The volume level adjustment screen is displayed.
2. Push [▲], [▼], [◀], or [▶] to adjust the audio volume level.
 - ① You can also push [MUTE] to select OFF, or [LOUD] to set the maximum volume level.
 - ② If no key is pushed for 5 seconds, the screen automatically closes.
3. Push [ENT] to set.



■ Adjusting the squelch level

Squelch enables the audio to be heard only while receiving a signal that is stronger than the set level. A higher level blocks weak signals, so that you can receive only stronger signals. A lower level enables you to hear weak signals.

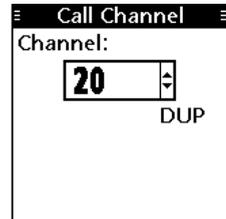
1. Push [VOL/SQL] twice.
 - The squelch level adjustment screen is displayed.
2. Push [▲], [▼], [◀], or [▶] to adjust the squelch level.
 - ① If no key is pushed for 5 seconds, the adjustment screen automatically closes.
3. Push [ENT] to set.



■ Setting the Call channel

By default, a Call channel is set in each Channel Group. You can set your most often-used channel as your Call channel in each Channel Group for quick recall.

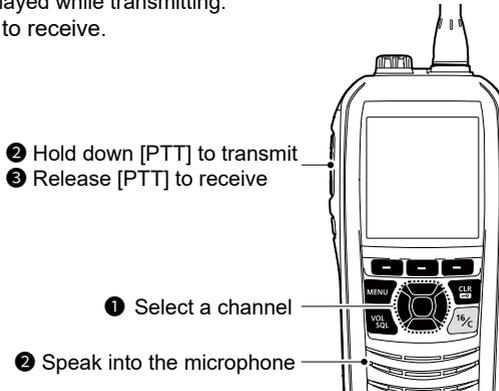
1. Open the "Call Channel" screen.
 - [MENU] > Settings > Radio > **Call Channel**
2. Push [▲] or [▼] to select the channel.
3. Push [ENT] to set the selected channel as the Call channel.
 - The transceiver returns to the previous screen.



■ Receiving and transmitting

CAUTION: DO NOT transmit without an antenna.

1. Push [▲] or [▼] to select the channel to call on.
 - ① You cannot transmit on Channel 70.
 - ① **BUSY** is displayed while receiving a signal.
2. Hold down [PTT] and speak into the microphone at your normal voice level.
 - **TX** is displayed while transmitting.
3. Release [PTT] to receive.



TIP: To maximize the readability of your transmitted signal, pause for a second after pushing [PTT] and hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, and then speak at your normal voice level.

NOTE:

- To conserve battery power, the Power Save function automatically turns ON when no signal is received for 5 seconds.
- When the temperature is extremely high, the battery protection function automatically sets transceiver power to Low, and disables High power selection.
- Except for the Export version, the Time-out Timer function cuts OFF transmission after 5 minutes of continuously transmitting, to prevent prolonged transmission. 10 seconds before transmission is cut OFF, a beep sounds and "TOT" blinks to indicate that the transmission will be cut OFF. After it is cut OFF, "TIME OUT" is displayed for 10 seconds, and you cannot transmit until it disappears.
- The Noise Cancel function reduces random noise components in the transmit and/or received signal. See page ? for details.

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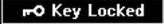
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6 BASIC OPERATIONS

■ Lock function

The Lock function electronically locks all keys except for [⏏], [PTT], and [DISTRESS]. This function enables you to prevent accidentally changing the channel, or accessing the functions.

- Hold down [CLR↔] for 1 second to turn the Lock function ON or OFF.
 -  is displayed on the bottom of the display while the Lock function is ON.

■ Monitor function

The Monitor function temporarily cancels the Squelch function to check for weak signals.

1. Hold down [VOL/SQL] to turn ON the Monitor function.
 - ① The Monitor function is ON while [VOL/SQL] is held down.
 - **MONI** is displayed. (2 beeps?)
 - If there is a weak signal, you can hear the signal and noise.
2. Release to turn OFF.

TIP: You can change the Monitor function settings. See page ? for details.

AquaQuake Water Draining function

Water in the speaker grill may muffle the sound coming from the speaker. The AquaQuake Water Draining function removes water from the speaker grill by vibrating the speaker.

CAUTION: DO NOT use the AquaQuake Water Draining function when an external speaker microphone is connected.

1. Push [◀] or [▶] to select **AQUA**.
2. Hold down the software key below **AQUA** to turn ON the function.
 - A low frequency vibration beep sounds to drain the water, regardless of the volume level setting.
 - ① This function is activated for a maximum of 10 seconds, even if you continue to hold down **AQUA**.
3. Release the key to turn OFF the function.



Editing a channel name

You can edit the name of each operating channel and weather channel, using numbers, uppercase letters, symbols, and a space. This enables easy recognition of the channels or stations. All VHF marine channels are set with default names.

1. Push [▲] or [▼] to select the channel to edit.
2. Push [◀] or [▶] to select **NAME**.
 - ① You cannot edit a channel name during Dualwatch, Tri-watch, or a Scan.
3. Push **NAME**.
 - The “Channel Name” screen is displayed.
4. Edit the channel name.
5. Select [Finish], and then push [ENT] to save the edited name and return to the operating screen.



TIP:

- Select [? \$!] to enter characters, and select [A1] to enter numbers and letters.



- Select characters or space using [▲]/[▼]/[◀]/[▶].
- Push [ENT] to enter the selected character.
- Select “←” or “→” on the screen to move the cursor.

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13 SPECIFICATIONS AND OPTIONS

■ Specifications

① All stated specifications are subject to change without notice or obligation.

① Measurements made without an antenna.

General		
Frequency coverage	TX	156.025 MHz ~ 157.425 MHz
	RX	156.050 MHz ~ 163.275 MHz
	DSC	156.525 MHz
	AIS	162.025 MHz
Type of emission		16K0G3E, 16K0G2B, 16K0GXW(GMSK)
Antenna impedance		50 Ω nominal
Input impedance (MIC)		2 k Ω
Output impedance (audio)	External	8 Ω
	Internal	
Intermediate frequency	MAIN	1st: 30.15 MHz, 2nd: 450 kHz
	DSC	1st: 46.35 MHz, 2nd: 450 kHz
	AIS	1st: 40.85 MHz, 2nd: 450 kHz
Operating temperature range		-20°C ~ +60°C, -4°F ~ +140°F
Power supply voltage		Negative ground: 7.2 V DC nominal
Current drain (at 7.2 V DC) (approximate)	Receive Maximum audio	External speaker: 0.35 A Internal speaker: 0.7 A
	Transmit	6 W: 1.5 A 1 W: 0.7 A
Dimensions (projections not included)		64 (W) \times 144.5 (H) \times 39 (D) mm 2.5 (W) \times 5.7 (H) \times 1.5 (D) in
Weight (approximate)		335 g, 11.8 oz (including battery pack, antenna, and belt clip)

Transmitter	
Rated output power	6 W or 1 W
Modulation	Variable reactance frequency modulation
Maximum frequency deviation	± 5 kHz
Frequency error	± 10 ppm
Spurious emissions (typical)	-68 dBc
Adjacent channel power	70 dB
Audio harmonic distortion (at 60% Deviation)	10%
Residual modulation	40 dB
Audio frequency response	+1 dB ~ -3 dB of 6 dB octave from 300 Hz ~ 3000 Hz

SPECIFICATIONS AND OPTIONS 13

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Receiver		
Sensitivity (typical)		0.25 μ V (12 dB SINAD)
Squelch sensitivity (threshold, typical)		0.25 μ V
Audio output power (at 10% distortion)	External (with 8 Ω)	0.35 W (typical)
	Internal (with 8 Ω)	1.5 W (typical)
Adjacent channel selectivity (typical)		70 dB
Spurious response (typical)		70 dB
Intermodulation (typical)		70 dB
Hum and noise		40 dB
Audio frequency response		+1 dB ~ -3 dB of -6 dB octave from 300 Hz ~ 3000 Hz

Receiver (DSC)		
Sensitivity (typical)		-3 dB μ emf (1% BER)
Adjacent channel selectivity (typical)		73 dB μ emf (1% BER)
Spurious response (typical)		73 dB μ emf (1% BER)
Intermodulation (typical)		68 dB μ emf (1% BER)

Receiver (AIS)		
Sensitivity (typical)		-107 dBm (20% PER)
Adjacent channel selectivity (typical)		50 dB (20% PER)
Spurious response (typical)		50 dB (20% PER)
Intermodulation (typical)		50 dB (20% PER)

GNSS Receiver		
Receiver frequency	GPS	1575.42 MHz
	GLONASS	1598.0625 MHz ~ 1605.375 MHz
SNR		>40 dB

13 SPECIFICATIONS AND OPTIONS

Options

Some options may not be available in some countries. Please ask your dealer for details.

◇ Battery pack

- **BP-306** LI-ION BATTERY PACK

Voltage: 7.2 V

Capacity: 2280 mAh (minimum),
2400 mAh (typical)

Battery life: Approximately 11 hours*

* When the Power Save function is ON,
and the operating periods are calculated
under the following conditions:

TX : RX : standby = 5 : 5 : 90

◇ Charger

- **BC-251** DESKTOP CHARGER

+**BC-123S** AC ADAPTER

To rapidly charge a battery pack.

◇ Others

- **FA-SC59V** ANTENNA

- **MB-133** BELT CLIP

- **MB-96F/MB-96FL** LEATHER BELT HANGER

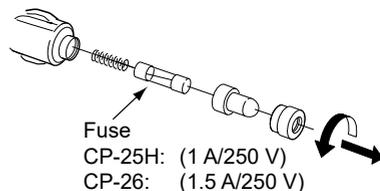
- **HM-165/HM-228** SPEAKER MICROPHONE

Full sized waterproof speaker
microphone including alligator type clip to
attach to your shirt or collar, and so on.

- **CP-25H/CP-26** CIGARETTE LIGHTER CABLE

For charging with the BC-251 DESKTOP
CHARGER through a 12 V cigarette lighter
socket.

NOTE: The CP-25H is equipped with
a 1 A fuse, and the CP-26 is equipped
with a 1.5 A fuse. If the fuse blows,
repair the problem, then replace it with
a new rated fuse. **DO NOT** use fuses
with amp ratings other than the ratings
written below.



■ Using the HM-165

Alligator type clip

To attach the speaker microphone to your shirt or collar.

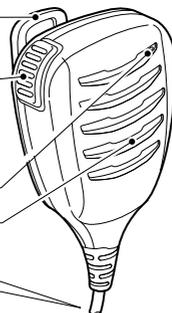
PTT switch

Push to transmit.
Release to receive.

Microphone

Speaker

Turn the transceiver power OFF when connecting the HM-165.



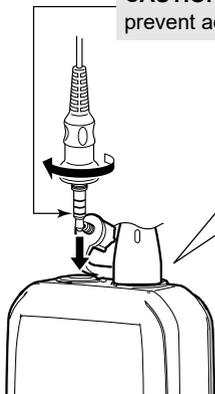
NOTE:

- **NEVER** immerse the connector in water. If the connector becomes wet, **BE SURE** to dry it before attaching to the transceiver.
- The microphone element is located at the top of the speaker microphone, as shown in the illustration above. To maximize the readability of your transmitted audio, hold the microphone approximately 5 ~ 10 cm (2 ~ 4 inches) from your mouth, and then speak at your normal voice level.
- If the audio sound becomes muffled, remove any water that may be inside the speaker grill and/or microphone hole.
- The DSC alarms sound from the transceiver, even while the speaker microphone is attached.

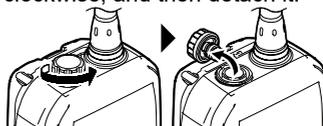
◇ Attaching the HM-165

1. Turn OFF the power.
2. Insert the speaker microphone connector into the connector and securely screw it, as shown below.
 - ① Be careful not to cross-thread the connection.

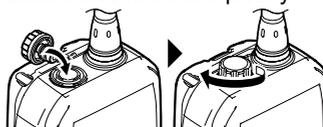
CAUTION: Attach the speaker microphone connector securely to prevent accidental loss, or water intrusion into the connector.



Detaching: Rotate the jack cover counter-clockwise, and then detach it.



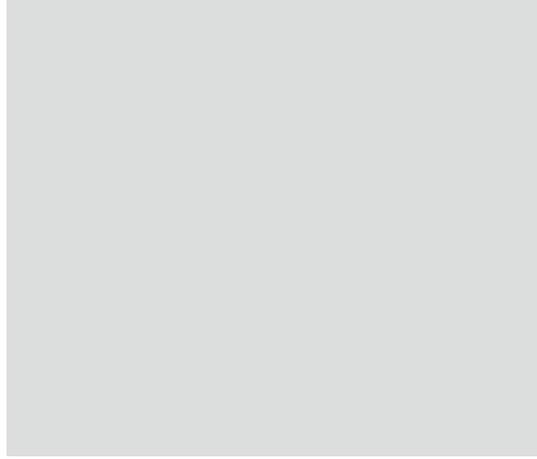
Attaching: Attach the jack cover, and then rotate it clockwise completely.



NOTE: **KEEP** the jack cover attached when the speaker microphone is not used. If the cover is not attached, water will get into the transceiver. Moreover, the terminals (pins) will become rusty, or the transceiver will function abnormally if the connector gets wet.

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Count on us!



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