

ICOM

INSTRUCTION MANUAL

VHF MARINE TRANSCEIVER
IC-M5

 **KB2LJJ**
Radio Mods Database

Icom Inc.

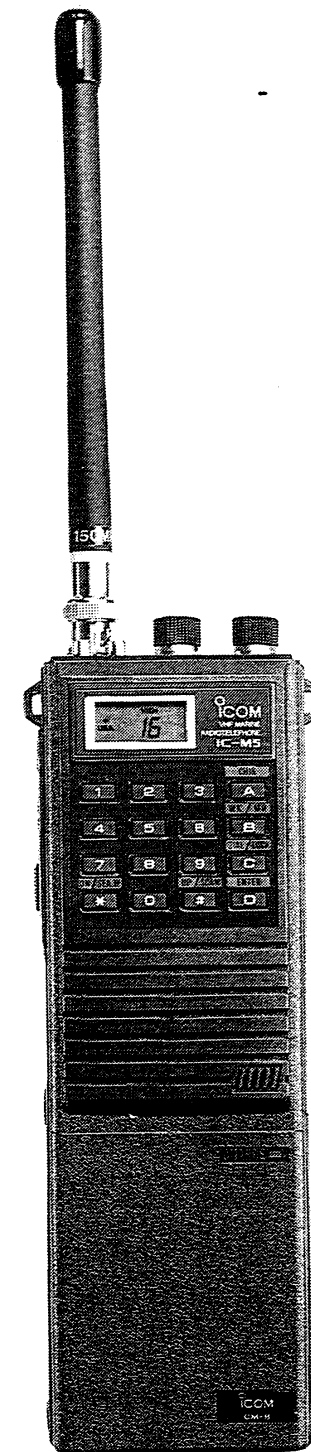


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CAUTION: The use of non-Icom battery packs/chargers may impair transceiver performance and invalidate the warranty.

SECTION I INTRODUCTION

SYNTHESIZED HANDHELD TRANSCEIVER

The ICOM IC-M5 is a very compact VHF synthesized handheld transceiver. Using the latest in electronic design, the IC-M5 offers key-board frequency selection. The IC-M5 covers all U.S. and International channels and 10 WEATHER channels.

The Channel 16 PRIORITY button gives instant access to that channel. Offering rugged construction, extreme stability and frequency accuracy, the IC-M5 will give you years of trouble-free operation.

VARIOUS POWER PACKS AVAILABLE

The Power Pack is slipped on the bottom of the radio very easily, and various power packs are available to suit your needs, for minimum size, higher power or longer use.

HIGHLY EFFICIENT FLEXIBLE ANTENNA

A highly efficient flexible antenna is supplied with the set. Since the IC-M5 uses a standard BNC-type connector an external antenna may be easily substituted for the flexible antenna.

MOISTURE PROOF

When the belt clip screws and rainproof cap for the top panel are in place, the IC-M5 is splash resistant.

SECTION II SPECIFICATIONS

GENERAL

Number of Semiconductors	Transistors	40
	FET	3
	IC	8
	Diodes	20
Number of Channels	All U.S.A. and International channels and 10 Weather channels (Auxiliary Priority channels available) Operation; Simplex, Semi-duplex	
Channel Spacing	25 KHz	
Frequency Stability	0.0005 Percent	
Usable Temperature	-20 Degrees C to 60 Degrees C (-4 Degrees F to 140 Degrees F)	
Antenna Impedance	50 ohms unbalanced	
Power Supply Requirement	Any ICOM battery pack listed on p. 35 12 ~ 15V DC from EXT. DC JACK	
Current Drain at 13.2V	Transmitting	
	At 5 watts output	Approx. 1.45A
	Receiving	
	At max audio output	Approx. 140mA
	Squelched	Approx. 35mA
Dimensions	118(129)mm(H) x 65(74)mm(W) x 35(41)mm(D) without power pack Attendant power pack, CM-7: 80mm(H) x 65mm(W) x 35mm(D) (); Shows the dimensions including projections	
Weight	590g including power pack, CM-7 and flexible antenna	

RECEIVER

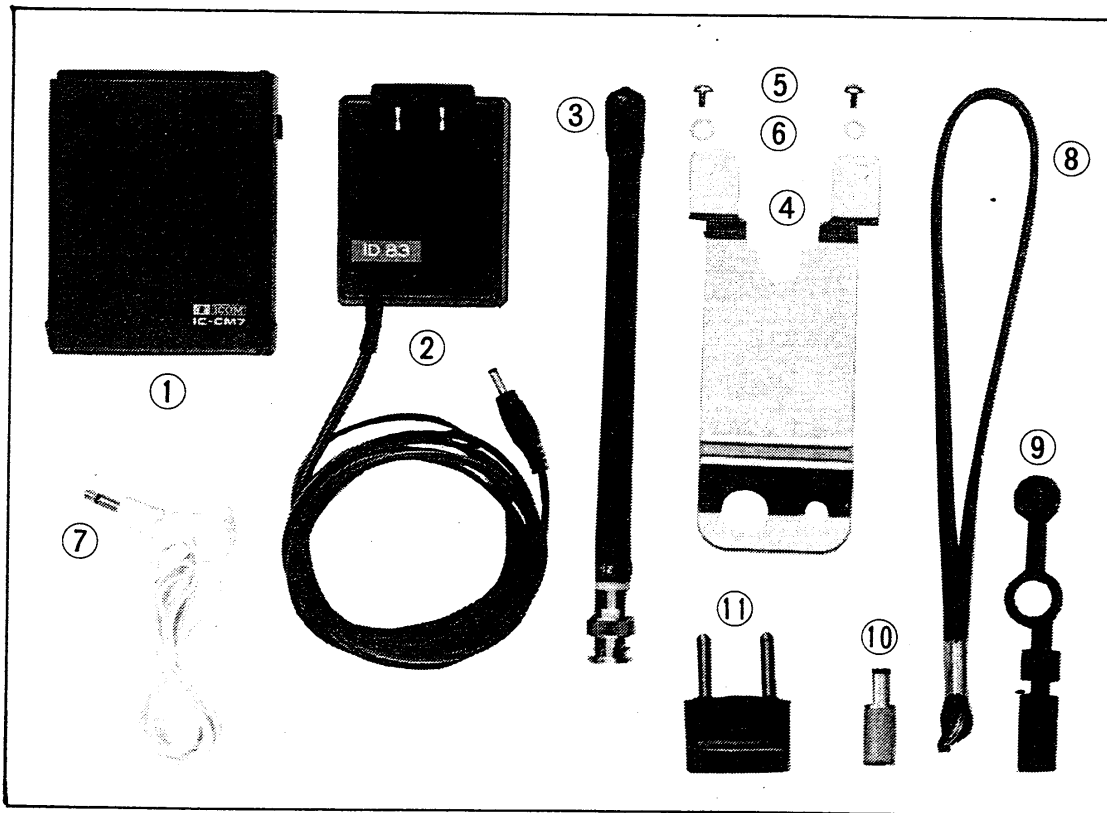
Frequency Range	156.025 ~ 157.425MHz and 160.625 ~ 163.275MHz
Receiving System	Double-conversion superheterodyne
Modulation Acceptance	16F ₃ ±7.5KHz (F3E 16K0).
Intermediate Frequency	1st: 16.9MHz 2nd: 455KHz
Sensitivity	Less than 0.3μV for 20dB Noise quieting Less than 0.25μV for 12dB SINAD
Squelch Sensitivity	Less than 0.1μV
Spurious response rejection ratio	More than 60dB
Selectivity	More than 65dB at adjacent channel
Intermodulation Rejection Ratio	More than 60dB
Audio Output Power	More than 500mW at 10% distortion
Audio Output Impedance	8 ohms

TRANSMITTER

Frequency Range	156.025 ~ 157.425MHz
Output Power	Hi: 5 watts, Low: 1 watt (Hi: 2.5 watts, Low: 1 watt with CM-8 8.4V battery)
Emission Mode	16F ₃ (F3E 16K0)
Modulation System	Variable reactance frequency modulation
Max. Frequency Deviation	±5KHz
Spurious Emission	More than 60dB below carrier
Microphone	Built-in Electret condenser microphone Optional Speaker-microphone (CM-9 or EM-46) and Headset (HS-10) can be used.

SECTION III ACCESSORIES

Carefully remove your transceiver from the packing carton and examine it for signs of shipping damage. Should any be apparent, notify the delivering carrier or dealer immediately, stating the full extent of the damage. It is recommended that you keep the shipping cartons. In the event storage, moving, or reshipment becomes necessary, they come in handy. Various accessories are packed with the transceiver. Make sure you have not overlooked anything.



1. Power pack CM-7 1
(attached to the set)
2. Wall charger CM-16U/E* . 1
3. Flexible antenna 1
4. Belt clip. 1
5. Belt clip retaining screws. 2
6. Plastic washers 2
7. Earphone. 1
8. Hand-strap. 1
9. Rainproof cap. 1
10. DC Power plug 1
11. AC conversion plug** . . 1
* CM-16U for 117V AC
CM-16E for 240V AC
** 117V AC version is not included.

SECTION IV PRE-OPERATION

BATTERY INSTALLATION

The supplied CM-7 NiCd POWER PACK is rechargeable and can be charged with the supplied CM-16U/E WALL CHARGER, optional CM-35 DESK CHARGER, or a 12V battery using the optional IC-CM1 cable. Before using the power pack, charge it for 15 hours with the CM-16U/E or 1.5 hours with the CM-35.

After charging is completed, the batteries can be used in the same manner as dry cells. However, the voltage of Nickel-Cadmium batteries drops rapidly just before they are exhausted, so when the battery exhausting indicator on the channel display is present, be sure to stop operating, and recharge the batteries.

When operating the transceiver in environments where re-charging is difficult or impossible, the optional CM-12 BATTERY PACK is recommended for use.

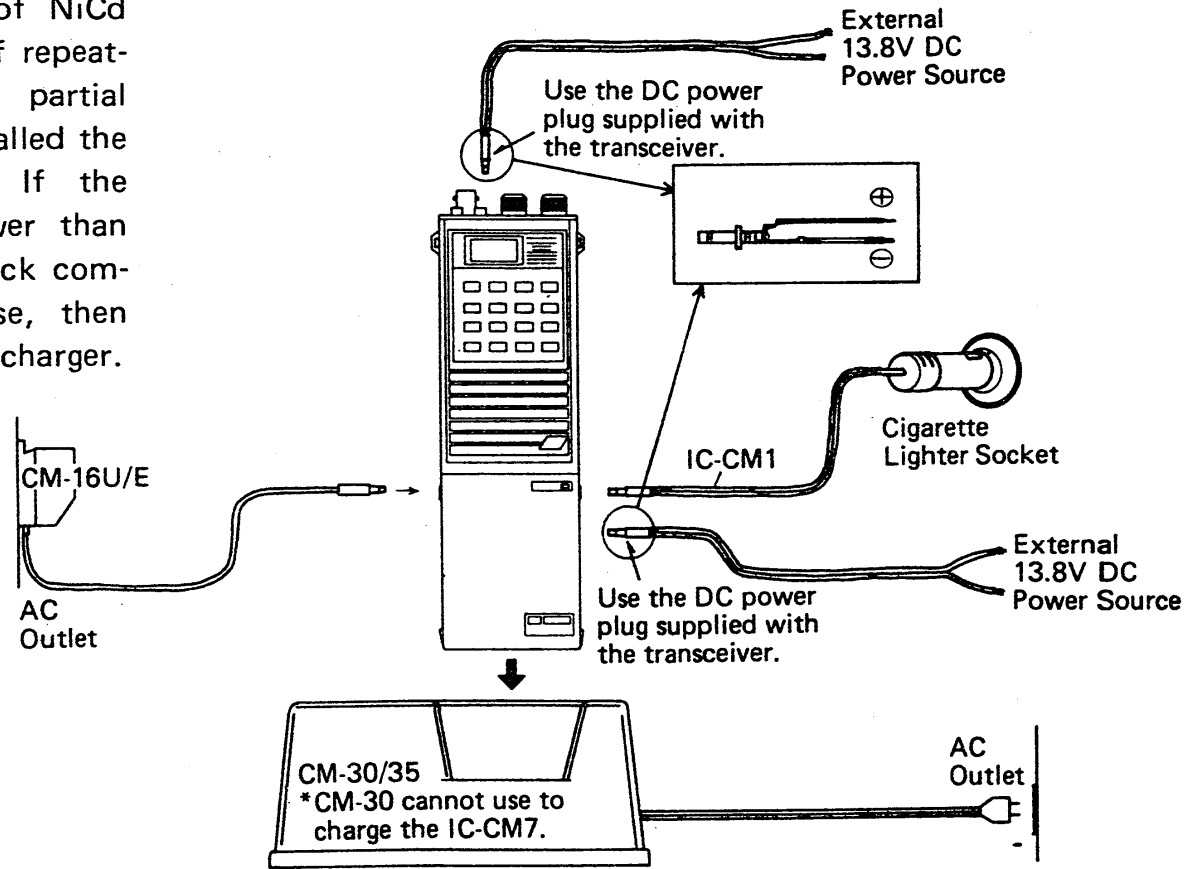
HOW TO CHARGE (When using Nickel-Cadmium power pack CM-7)

1. Use the supplied CM-16U/E WALL CHARGER, optional CM-35 DESK CHARGER, or a stable power source with an output voltage of 13.8V DC and current capacity over 100mA, or use a 12V battery with the optional IC-CM1 cable. (Output voltage of 12 ~ 15V can be used, but output voltage near the specified voltage should be used.)
2. The power switch of the transceiver must be OFF, or remove the power pack from the transceiver.

- Connect the output plug of the wall charger (CM-16U/E), or other power source, to the charger socket of the power pack.
The charge indicator LED of the power pack is lit, which shows that the charger is working.

BATTERY PACK NOTE:

The full charge capacity of NiCd batteries may be reduced if repeatedly charged with only partial discharge periods. This is called the battery memory effect. If the battery capacity seems lower than when new, discharge the pack completely through normal use, then charge fully using the proper charger.

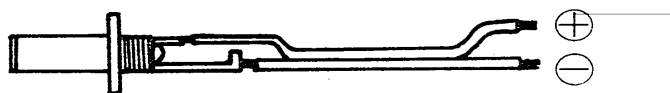


4. It takes about 15 hours to charge the batteries completely with CM-16U/E. This charger is designed for 0.1C (10-hour rate current). Charging for 15 hours compensates for any unbalance of the batteries. (It takes about 1.5 hours with CM-35)
You should charge the batteries for 15 hours when you have not used them for a long time or after buying them.
5. Charge between 0°C and 40°C.
6. Avoid continuous charging as much as possible after full charging, (15 hours). If excess charging is repeated, the total life of the power pack is reduced.
7. After charging, unplug the power source from the charger socket of the power pack. The transceiver and the power pack are now ready for operation.

EXTERNAL POWER SOURCE

For use at home or for long periods, please use an external power source which assures you of stable communications without the concern of battery consumption.

1. Use either a regulated power supply or a battery of 13.8V DC and of over 1.5A current capability.
2. Correctly connected the external supply to the external DC power jack as shown in the figure. If polarity is reversed, source power is cut off by the protection circuit and the unit will not operate.



PRECAUTIONS FOR USE OF THE NICKEL-CADMIUM BATTERIES (from the JIS C8705 MANUAL)

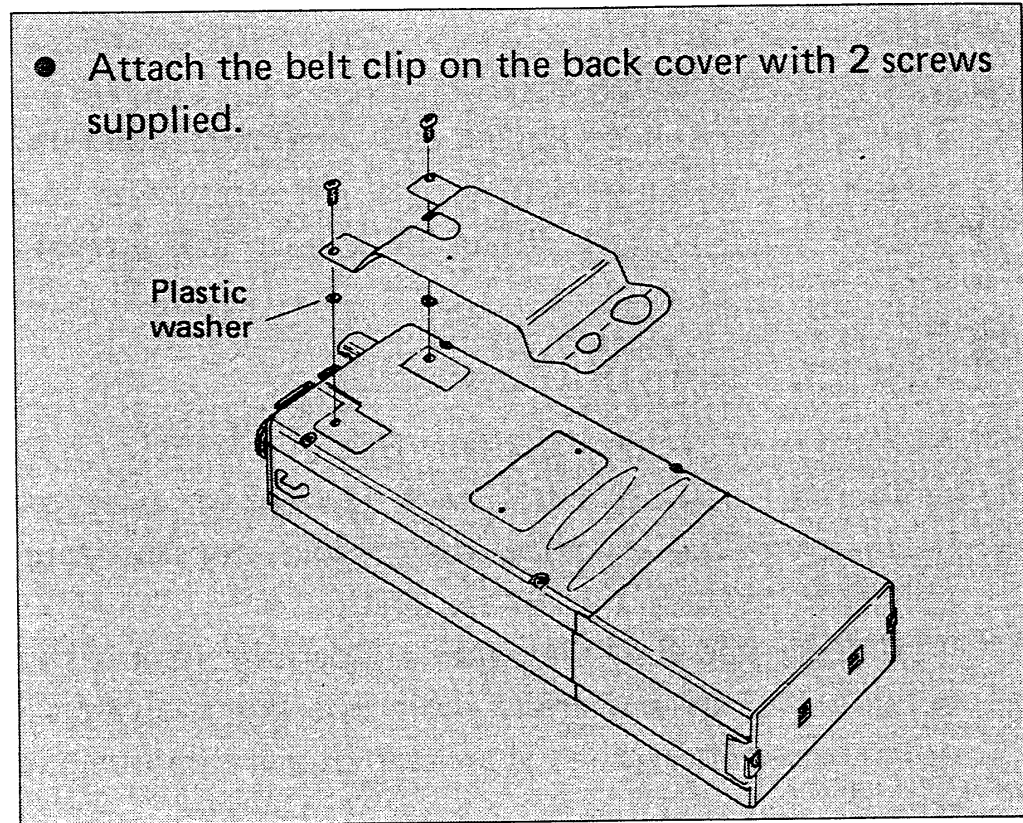
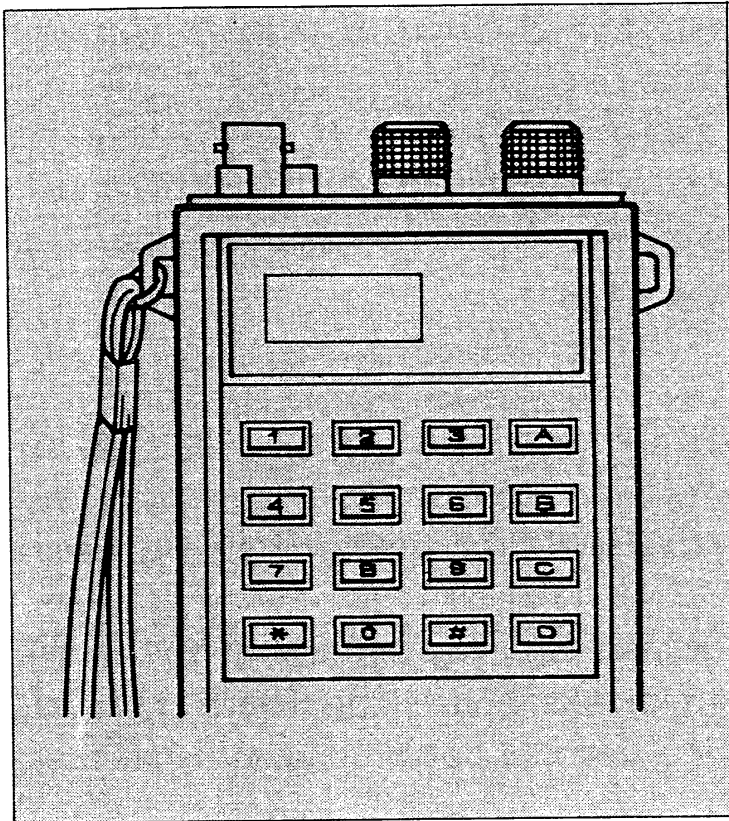
General Cautions

1. Never short the power pack.
Since internal resistance is low, excess shorted current flows away, causing the batteries or conductors to burn. Avoid shorts! The polarity is shown on the power pack.
2. Never solder the batteries directly.
If the batteries are soldered directly, the separator or insulator may become melted and damaged. Accordingly, the terminal must be spot-welded first and then soldered.
3. Confirm polarities in order to prevent reverse charging.
If they are charged in reverse, batteries may be damaged. Therefore confirmation of correct polarity is essential, to proper operation.
4. Never charge with excess charging current.
If an excess charging rate is employed, gas consumption speed cannot keep up with gas generating speed at the time of charging. Batteries may be damaged by increasing internal pressure. Accordingly, the charging must be kept regulated.
5. Avoid charging under 0°C or over 40°C.
Under 0°C, since gas consumption speed becomes lower at the charging time, inside pressure increases and hydrogen is generated. Since charging efficiency is reduced over 40°C, it is rather difficult to charge. Accordingly, charging must be done between 0°C and 40°C.
6. Never put batteries into fire.
Since there may be a little gas left in the batteries, internal pressure increases suddenly and the batteries explode if thrown into a fire. Also, battery electrolyte is ejected and can cause damage to skin and clothes.

FOR USE

1. Attach the supplied power pack. (Refer to "BATTERY INSTALLATION")
2. Attach the supplied hand strap and belt clip through the fixture on the body (as shown in the drawings.)
3. Attach the flexible rubber antenna or connect an external antenna.

ATTACHMENT OF HAND STRAP AND BELT CLIP



EXTERNAL ANTENNA

1. Select a high performance antenna and set it up in the highest possible position.
2. Use a 50 ohm antenna and coaxial cable.
3. On VHF, the power loss in the antenna cable is large, so use a cable with the lowest possible loss and make it as short as possible.
4. Use a BNC plug for connection to the unit.

LICENSES REQUIRED

1. Ship Station License

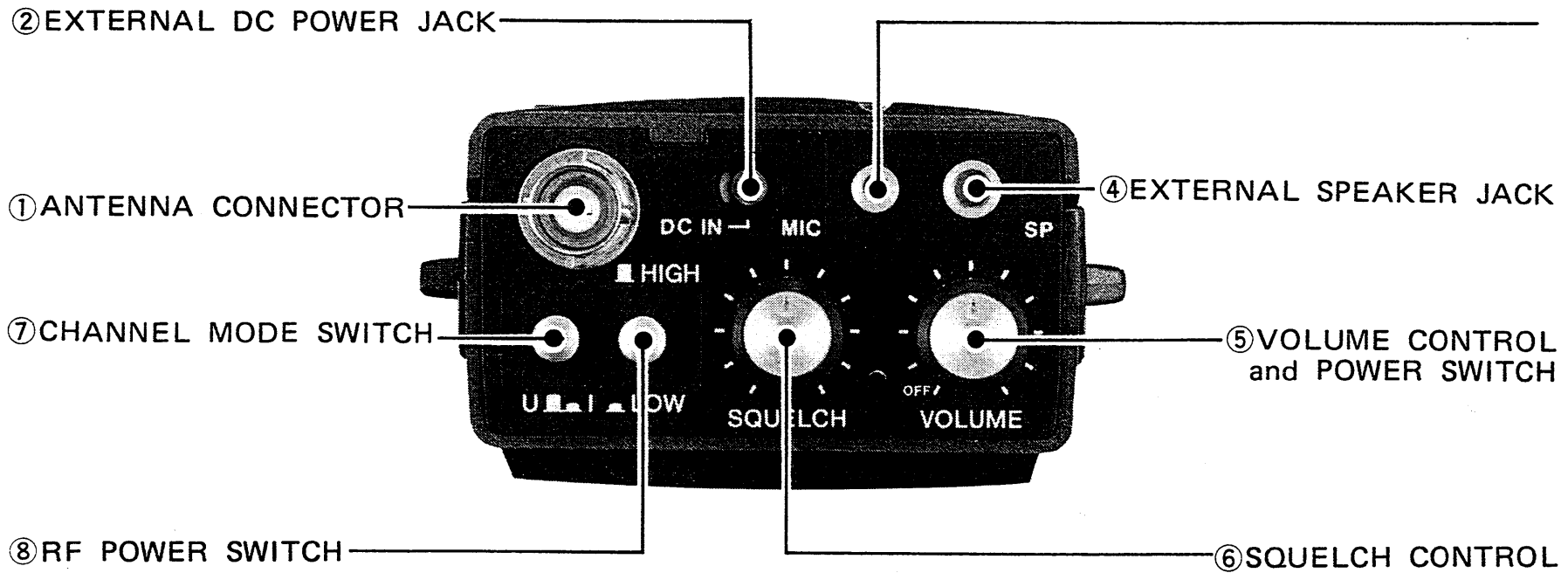
Your craft, when equipped with VHF/FM equipment, has a radio station on board which, if used, must have a current license. It is unlawful to operate a Ship Station which is not licensed. Inquire through your dealer or appropriate government agency for an application for a Ship Radio-Telephone license. Your craft station will be issued a call sign.

2. Operators License

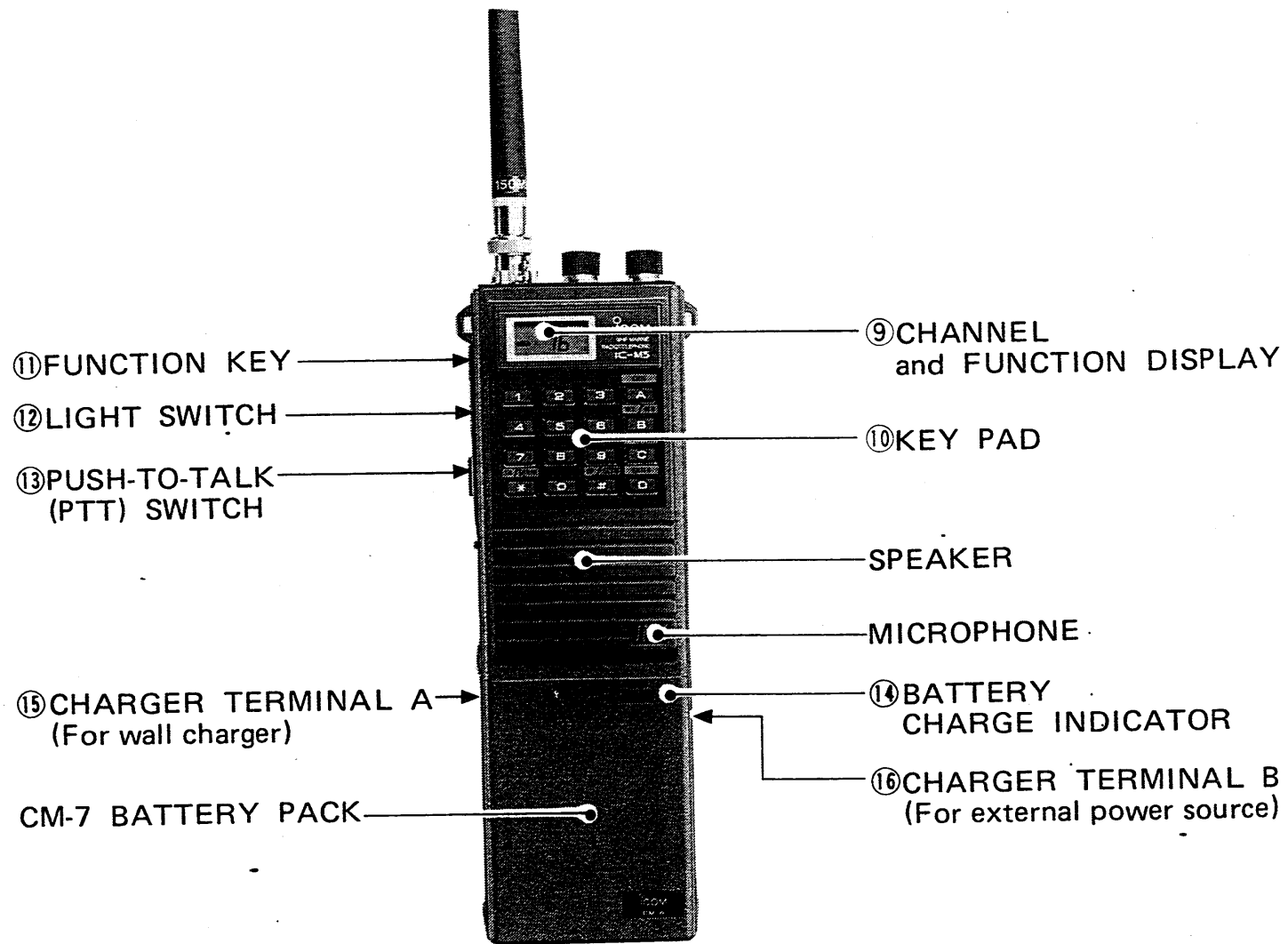
A Restricted Radiotelephone Operator Permit is the license most often held by small vessel radio operators if a radio is not required for safety purposes. You can usually obtain this permit by mail without examination. Again, contact your marine dealer or appropriate government agency for information or application.

The Restricted Radiotelephone Operator Permit must be posted or kept on the person of the operator. Only a licensed radio operator may operate a radiotelephone transmitter. However, non-licensed individuals may talk over a radiotéléphone if a licensed operator starts, supervises, ends the call, and makes necessary log entries.

SECTION V CONTROL FUNCTIONS



FRONT PANEL



1. ANTENNA CONNECTOR

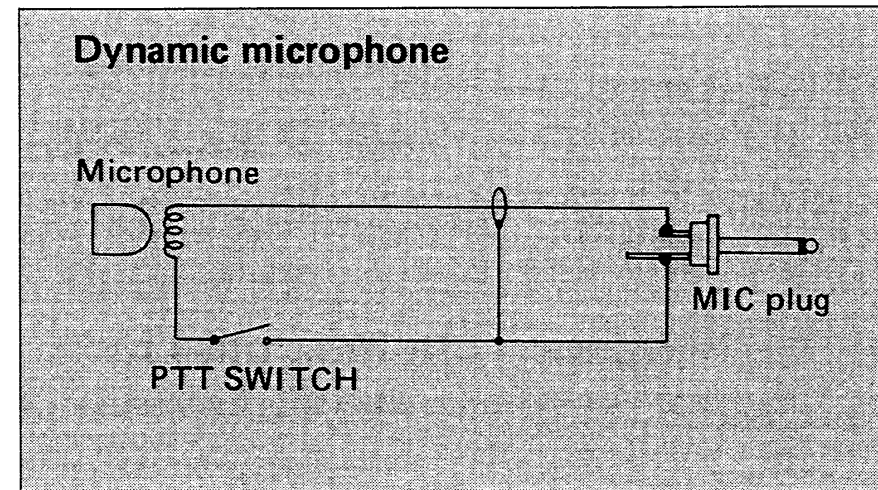
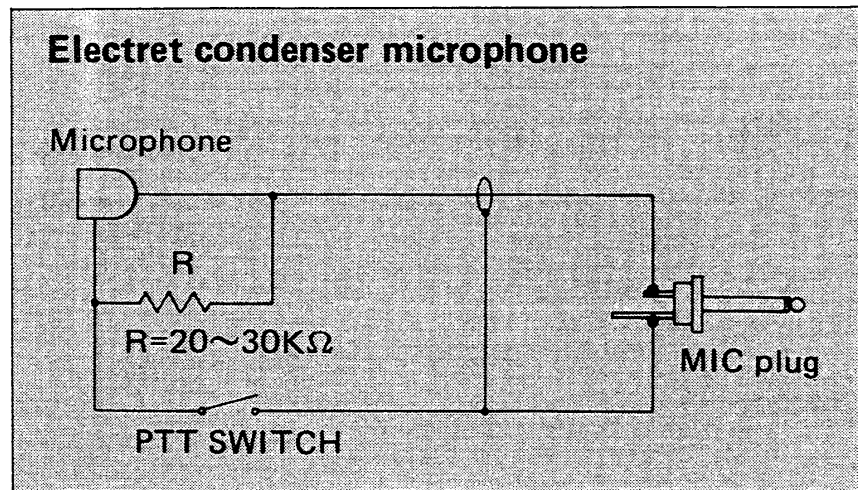
Connect the supplied flexible antenna. An external antenna can be used using a BNC connector.

2. EXTERNAL DC POWER JACK

A voltage regulated DC power supply with an output of 12 volts ~ 15 volts can be connected here, instead of using the battery pack. Inserting the power plug into this jack, disables the attached power pack. The CM-7 will recharge automatically from power applied here.

3. EXTERNAL MIC JACK

When an external microphone is used, connect it to this jack. See the schematic for the proper hookup. When the external microphone is connected the built-in microphone does not function. The optional speaker-microphone, CM-9 or EM-46, or headset HS-10 with HS-10SA VOX unit, or HS-10SB PTT switch box, can also be used.



4. EXTERNAL SPEAKER JACK

When an external speaker (or an earphone) is used, connect it to this jack. Use a speaker with an impedance of 8 ohms. When the external speaker is connected the built-in speaker does not function.

5. VOLUME CONTROL and POWER SWITCH

When this control is turned completely counterclockwise, the power is OFF. By turning the control clockwise beyond the "click", the unit is turned ON and the audio level increases by further rotating it clockwise.

6. SQUELCH CONTROL

Sets the squelch threshold level. To turn OFF the squelch function, rotate this control completely counterclockwise. To set the threshold level higher, rotate the control clockwise.

7. CHANNEL MODE SWITCH

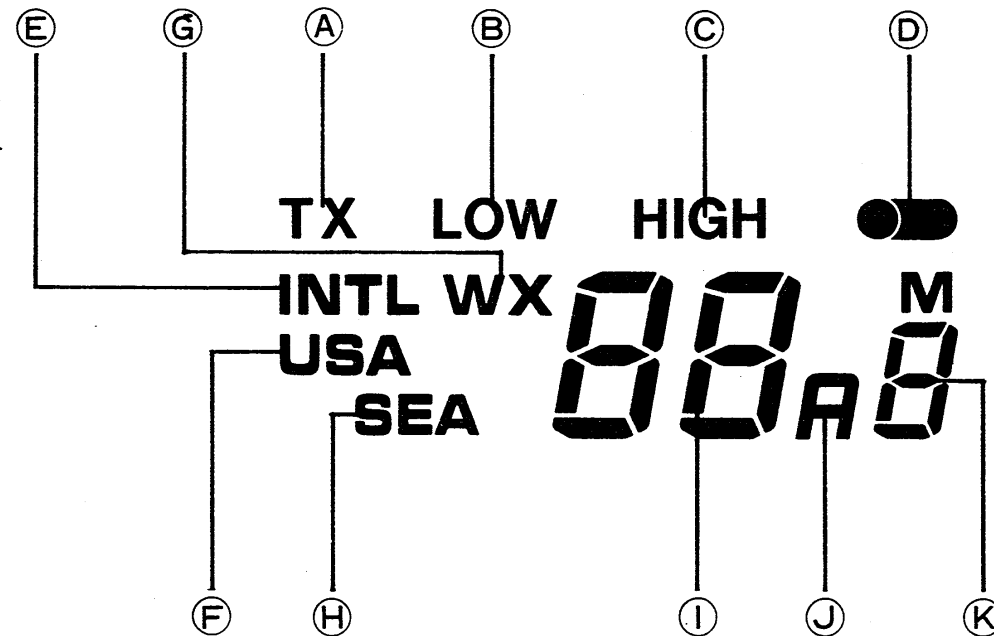
Switches the channels for the international or U.S.A. (or domestic) use.

8. RF POWER SWITCH

Switches the output power of the set HIGH and LOW. In the HIGH (out) position, the output power is 5 watts at 13.2 volts. In the LOW (locked in) position, the output power is 1 watt at any voltage.

9. CHANNEL and FUNCTION DISPLAY

Displays the operating channel and status of the radio.



- A. TRANSMIT INDICATOR: "TX" is displayed when the set is in the transmit mode.
- B. LOW POWER INDICATOR: "LOW" is displayed when the set is in the low output power (1W) mode.
- C. HIGH POWER INDICATOR: "HIGH" is displayed when the set is in the high output power (5W) mode.
- D. BATTERY CONDITION/SCAN INDICATOR: This mark is displayed just before the battery is exhausted. When the mark is displayed, stop to use the set and recharge the battery pack or replace the battery pack with a charged one. When the set is in a scan mode, this mark will be blinking.
- E. INTERNATIONAL MODE INDICATOR: "INTL" is displayed when the International mode is selected.

- F. U.S.A. MODE INDICATOR: "USA" is displayed when the U.S.A. mode is selected.
- G. WEATHER CHANNEL INDICATOR: "WX" is displayed when a weather channel is selected.
- H. SEA (DUAL WATCH) INDICATOR: "SEA" is displayed when the SEA (dual watch) function is turned ON.
- I. CHANNEL DISPLAY: Indicates the operating channel with 2 digits.
- J. U.S.A. CHANNEL INDICATOR: "A" is displayed when a U.S.A. mode channel is selected.
- K. MEMORY CHANNEL DISPLAY: When a memory channel is selected, the selected memory channel number and letter "M" are displayed here. When the operating channel is locked by the lock function, the letter "L" is displayed here instead of the memory channel number.

10. KEY PAD

This key pad has 16 keys consisting of ten numerical keys and six code keys. Some keys have dual functions.

The primary functions are available by just pushing each key. The ten numerical keys function to set a digit indicated on each key. The other keys function to set functions indicated above each key with letters on gray colored base.

The secondary functions are available by pushing each key while the "FUNC" key on the side is depressed. Each function is indicated above the key with letters on olive colored base.

11. FUNCTION KEY

By depressing this key, the secondary function of each key can be selected.

12. LIGHT SWITCH

While depressing this switch, the CHANNEL and FUNCTION DISPLAY is illuminated.

13. PUSH-TO-TALK (PTT) SWITCH

For transmission, press this switch and talk into the microphone with normal voice. The internal microphone is of the electret-condenser type and provides good pickup for all voice levels.

14. BATTERY CHARGE INDICATOR

Lights during battery charging.

15. CHARGER TERMINAL A

Connects the output plug of the supplied wall charger CM-16U/E or other suitable power source.

16. CHARGER TERMINAL B

Connects an output plug of an external 13.8V DC power source.

SECTION VI OPERATION

KEY FUNCTION

Some keys have dual functions. To set the secondary function, depress the "FUNC" key located on the side, until the key input for desired function has been completed.

KEY	PRIMARY FUNCTION		SECONDARY FUNCTION	
	SYMBOL	FUNCTION	SYMBOL	FUNCTION
1	1	Sets the digit of 1.	-----	-----
2	2	Sets the digit of 2.	-----	-----
3	3	Sets the digit of 3.	-----	-----
4	4	Sets the digit of 4.	-----	-----
5	5	Sets the digit of 5.	-----	-----
6	6	Sets the digit of 6.	-----	-----
7	7	Sets the digit of 7.	-----	-----
8	8	Sets the digit of 8.	-----	-----
9	9	Sets the digit of 9.	-----	-----
0	0	Sets the digit of 0.	-----	-----
*	DN	Decreases the operating channel number or operating memory channel number.	SEA. W	Sets the SEA (dual watch) function. To turn off this function, push the "A", "B" or "C" key without depressing the "FUNC" key, or "FUNC" key.

KEY	PRIMARY FUNCTION		SECONDARY FUNCTION	
	SYMBOL	FUNCTION	SYMBOL	FUNCTION
#	UP	Increases the operating channel number, or operating memory channel number.	SCAN	Starts the all channel Scan when the radio is in the DIAL mode, or the memory channel scan when the radio is in the memory channel mode. To stop the scan, push "A", "B" or "C" key.
A	CH16	Sets the radio to Channel 16.	-----	-----
B	WX	Sets the radio in the weather channel mode. Push the key, then a desired channel number "0" ~ "9".	MR	Sets the radio in the memory channel mode. Push the key, then a desired channel number "0" ~ "9" key without depressing the "FUNC" key.
C	DIAL	Sets the radio in the dial mode. To set an operation channel, push this key, then desired number keys and "ENTER" key.	LOCK	Cancels any key pushing to prevent accidental key pushing. To clear this function, push this key again while depressing the "FUNC" key.
D	ENTER	Sets an operation channel, or writes an operation channel into a memory channel. Push this key, after a desired channel number keys have been pushed.	-----	-----

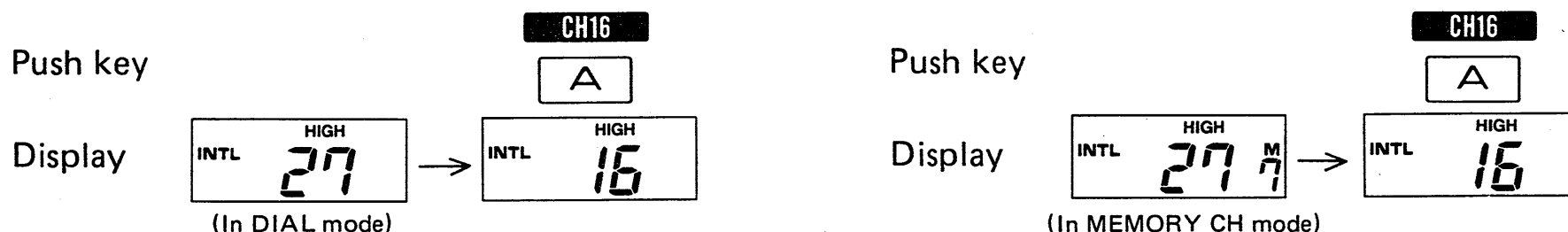
CAUTION: Be sure to release the radio from the dial lock function prior to turning off. If the radio is turned off while in the dial lock mode, it is necessary to push the function button and dial lock button after turning back on to release from dial lock and resume normal operation.

CHANNEL SELECTION

Channel 16 SETTING

By pushing the "A" (CH16) key, Channel 16 is selected instantly, regardless of the operating condition of the radio (except when the lock function is activated).

FOR EXAMPLE



DIAL MODE

When the radio is in the DIAL mode, the following channels can be selected:

Channels 01 - 28

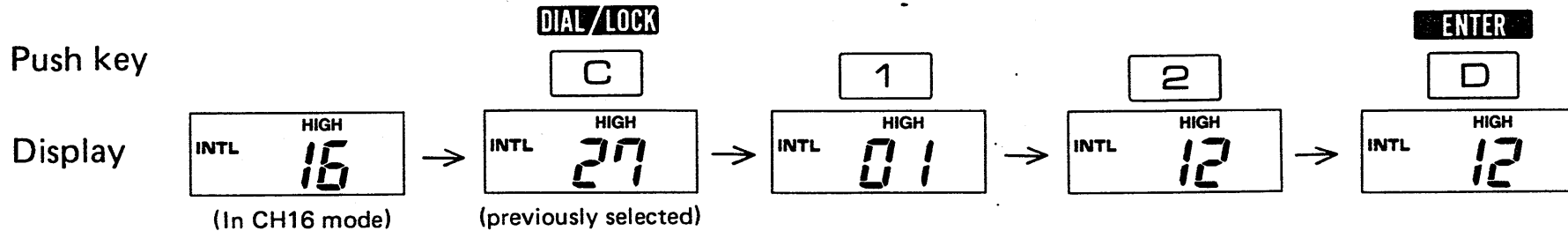
Channels 60 - 74

Channels 77 - 88

To set a desired channel, first of all, push the "C" (DIAL) key, set the channel mode switch to the mode including the desired channel, then enter the channel number into the display by pushing the appropriate numbers on the keyboard. Then push the "D" (ENTER) key if the displayed number is correct.

FOR EXAMPLE

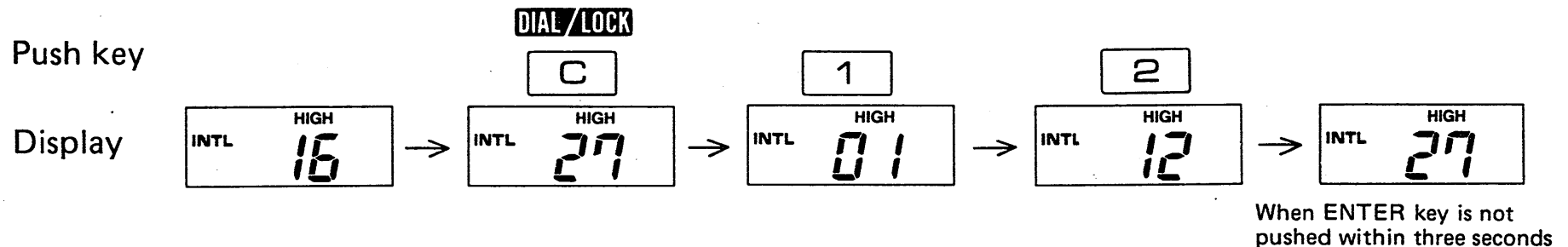
When setting the operation channel to Channel 12;



The channel numbers other than above are invalid and cannot be accepted. In this case, by pushing the ENTER key, the entered number is canceled and the display will retain the previous channel number.

If the appropriated channel number has been selected but the ENTER key is not pushed within three seconds, the display will blink several times, then the previous channel number will continue to be displayed and retained.

FOR EXAMPLE



WEATHER CHANNEL MODE (Some versions are not provided.)

When the radio is in the WEATHER CHANNEL mode, the following weather channels can be selected:

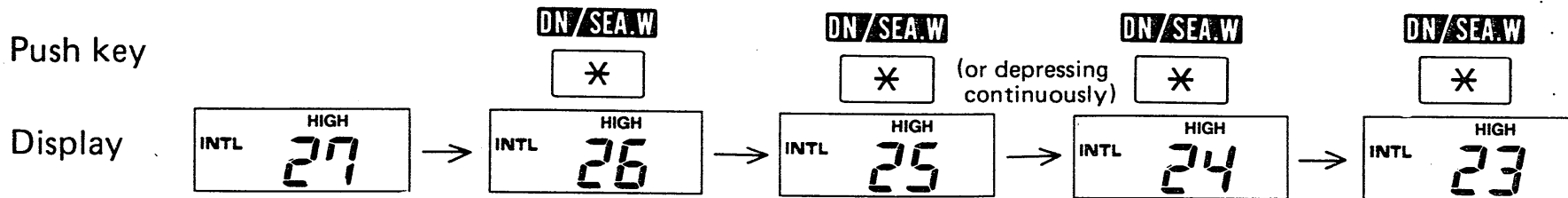
Weather Channel (WX)	1	162.550MHz
Weather Channel (WX)	2	162.400MHz
Weather Channel (WX)	3	161.650MHz
Weather Channel (WX)	4	162.475MHz
Weather Channel (WX)	5	162.425MHz
Weather Channel (WX)	6	162.500MHz
Weather Channel (WX)	7	162.525MHz
Weather Channel (WX)	8	162.450MHz
Weather Channel (WX)	9	161.775MHz
Weather Channel (WX)	0	163.275MHz

(These Channels are receive only.)

To set a desired weather channel, push the "B" (WX/MR) key, then enter the weather channel number, and the letters "WX" and channel number are displayed on the CHANNEL and FUNCTION DISPLAY. After this, to set a desired weather channel, simply push the number key of the desired one.

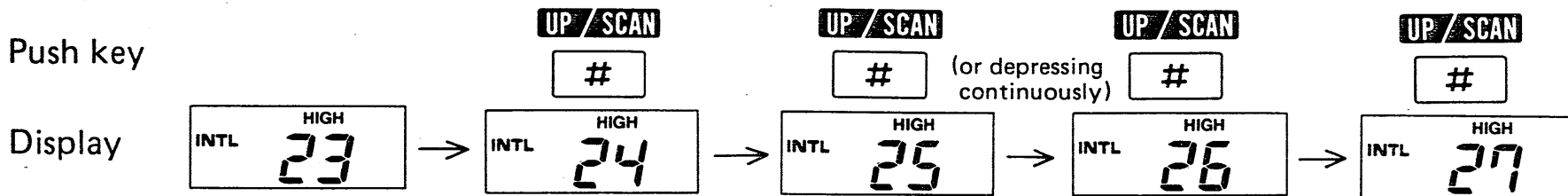
Pushing the "*" (DN) key one time decreases the channel number by one increment. However, pressing the DN key continuously decreases the channel number continuously until the DN key is released.

FOR EXAMPLE



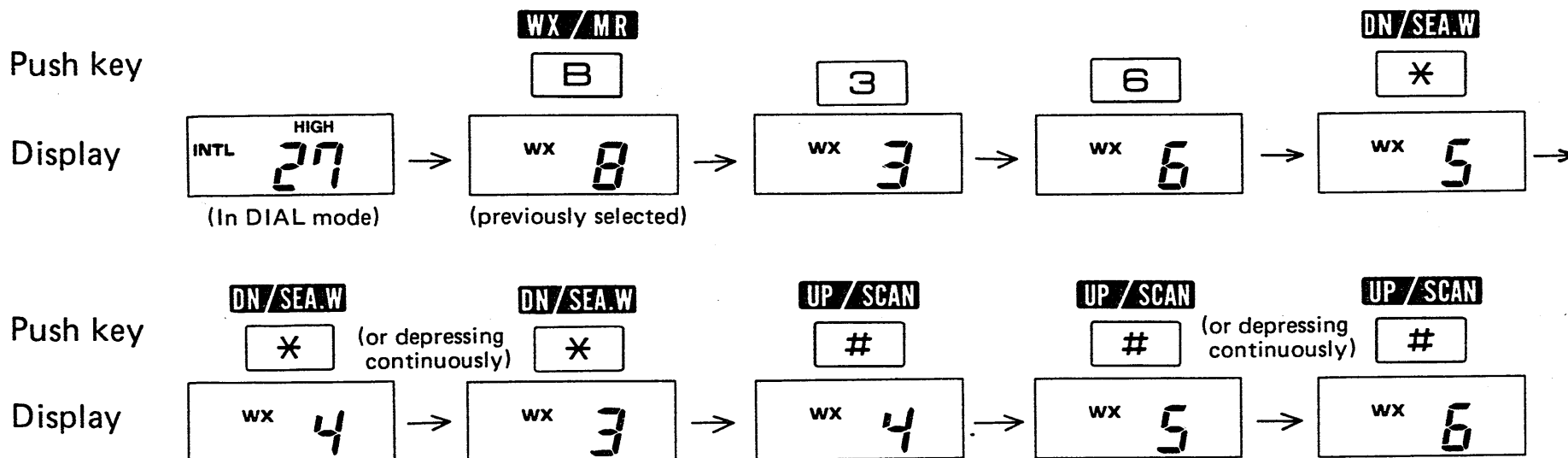
In the like manner, pushing the "#" (UP) key increases the channel number.

FOR EXAMPLE



FOR EXAMPLE:

When setting the operating channel to Weather Channel 3, then changing it to other channel:



MEMORY CHANNEL MODE

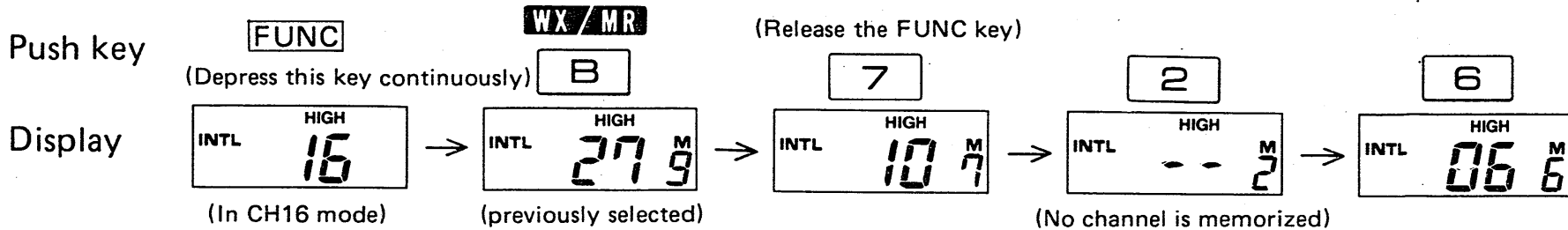
MEMORY READ:

To recall an operation channel memorized in a memory channel, while depressing the "FUNC" key, push the "B" (WX/MR) key, and a memory channel number and an operation channel which have been set previously, will be displayed on the CHANNEL and FUNCTION DISPLAY, then push a digit key of the same number as the memory channel which has memorized the desired operation channel.

If no operation channel is memorized in the memory channel, "--" will be displayed, and channel 16 will be displayed with release of the "FUNC" key.

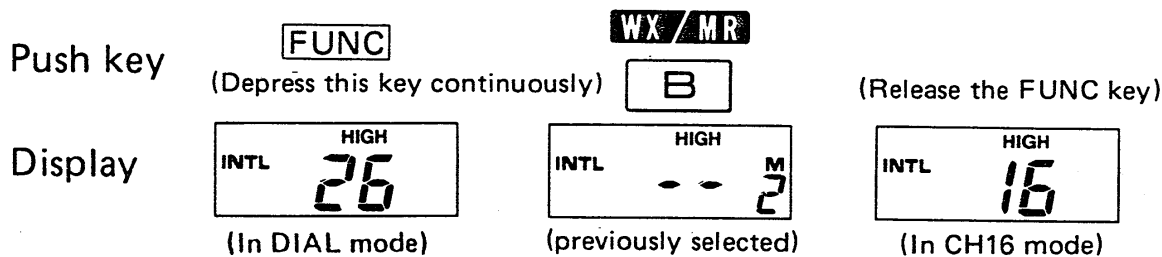
FOR EXAMPLE:

When recalling the channel memorized in the memory channel 7;



FOR EXAMPLE:

When the recalled channel has not memorized any operation channel;



MEMORY WRITE

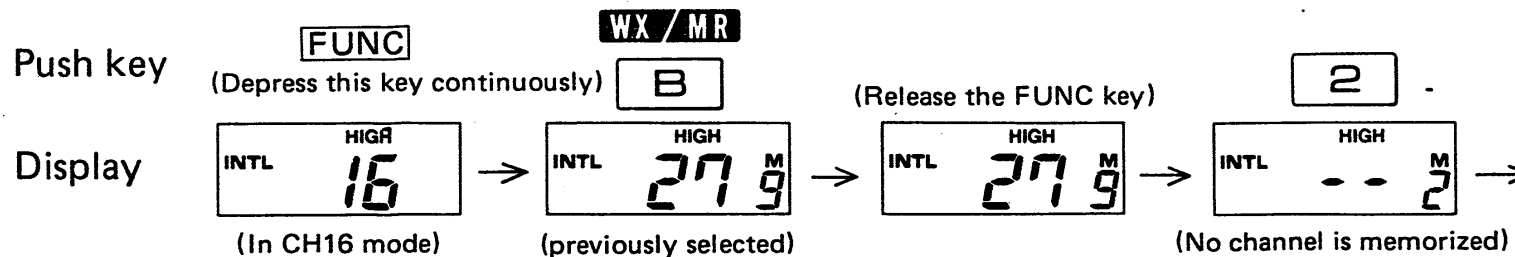
Any operation channels (except weather channels) can be memorized into memory channels.

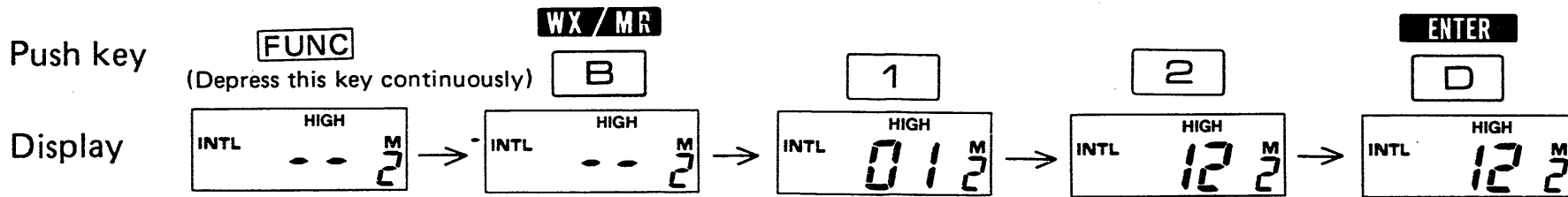
When no operation channels have been memorized in any memory channels, while depressing the "FUNC" key, push the "B" (WX/MR) key (a memory channel number and "- -" are displayed), an operation channel number and the "D" (ENTER) key, then release the "FUNC" key. The operation channel number is memorized in the displayed memory channel.

After this, or when at least one memory channel has been memorized or when rewriting a memorized operation channel, select a desired memory channel to be memorized a desired operation channel, push the "B" (WX/MR) key while depressing the "FUNC" key, then enter the desired operation channel number into the display by pushing the appropriate numbers on the keyboard. Then push the "D" (ENTER) key if the displayed number is correct. If the "D" (ENTER) key is not pushed within three seconds, the entered number will be blinked then previous channel number (or "- -") will be displayed.

FOR EXAMPLE:

When memorizing Channel 12 into Memory Channel 2;





SCANNING OPERATION

The SCAN can be used in the DIAL mode, WEATHER CHANNEL mode and the MEMORY CHANNEL mode.

In the DIAL mode, the radio scans all channel in the allocation selected by the CHANNEL ALLOCATION SWITCH.

In the WEATHER CHANNEL mode, the radio scans all 10 weather channels.

In the MEMORY CHANNEL mode, the radio scans only the memory channels which are memorized an operation channel respectively.

To set in the SCAN mode, push the “#” (UP/SCAN) key while pressing the “FUNC” key (the squelch should be engaged at this time), and the SCAN is activated.

When a signal is received on a channel, the squelch is opened and the SCAN stops on the channel. At this time, the BATTERY CONDITION/SCAN INDICATOR will be blinked to show the radio is in the SCAN mode. The SCAN will resume after the signal goes away.

To resume the SCAN when the scan stops on a signal, push the “#” (UP/SCAN) key while depressing the “FUNC” key, and the displayed channel changes to the upper channel. If the upper channel is no signal the scan will resume.

If the radio is turned to transmit mode during the scan function, the transmit frequency will be the frequency of the displayed channel at the moment. At this time, the scan function is cleared and the channel is locked.

To clear the scan function, just push the “FUNC” key, and the scan stops on the displayed channel. When the “A” (CH16) key is pushed, the scan will stop and the operating channel will go to channel 16. In the like manner, when the “B” (WX/MR) or “C” (DIAL/LOCK) key is pushed, the scan will stop and the operating channel will go to a channel in the respective mode.

When the radio is in the scan mode, all key functions, except the “A” (CH16), “B” (WX/MR) and “C” (DIAL/LOCK) key functions, are disabled.

SEA (DUAL WATCH) OPERATION

This function allows a check of channel 16 while operating on another channel. If a signal appears on channel 16, the radio watches it until the signal has disappeared, then the radio return to operate on the other channel.

The following steps are taken to utilize the SEA (DUAL WATCH) function.

1. Select channel 16 by pushing the “A” (CH16) key, then engage the squelch.

2. Select the desired channel by pushing the "B" (WX) or "C" (DIAL) key, or the "B" (MR) while depressing the "FUNC" key, depending on the desired channel, and entering the desired channel number.
3. Push the "*" (DN/SEA. W) key while depressing the "FUNC" key, and the radio operates on the selected channel for two or three seconds and on channel 16 for a moment (about 0.1 second) alternately.
4. If a signal appears (the squelch will be opened by the signal) on channel 16, the radio receives on channel 16 until the signal has disappeared, then the radio will continue the SEA OPERATION.
5. The radio can transmit on the selected channel (except weather channels), even if the SEA OPERATION is functioning and the radio is receiving on channel 16. When the radio returns in the receive mode, the radio will continue the SEA OPERATION.

If wishing to transmit on channel 16, push the "A" (CH16) key, and the SEA OPERATION is disengaged and the radio operates on channel 16. To clear the SEA OPERATION, push the "FUNC" key, or the "C" (DIAL) or "B" (WX) key depending on the selected channel, and the radio operates on the selected channel.

LOCK FUNCTION

This function provides to prevent a mis-operation by an accidental key pushing.

By pushing the "C" (DIAL/LOCK) key while depressing the "FUNC" key, the displayed channel (and other data, if any) is fixed, and the letter "L" is displayed at the memory channel number position to show the LOCK FUNCTION is actuated. At this time, all the key functions are disabled.

To clear the LOCK function, push the "C" (DIAL/LOCK) key again while depressing the "FUNC" key.

CAUTION: Be sure to release the radio from the dial lock function prior to turning off. If the radio is turned off while in the dial lock mode, it is necessary to push the function button and dial lock button after turning back on to release from dial lock and resume normal operation.

RECEIVING

Make sure the VOLUME CONTROL and POWER SWITCH is in the OFF position, and before turning the power ON, confirm as follows:

1. Make sure the power pack is properly charged and attached to the set.
2. Make sure the supplied flexible antenna is properly set.

When an external antenna is employed, make sure the coaxial line is of the correct impedance (50 ohms) and is neither shorted nor opened, and is firmly connected to the antenna connector.

Set the controls and switches as follows:

- | | | |
|---|---------------------------------|--|
| ⑤ | VOLUME CONTROL and POWER SWITCH | Completely counterclockwise (OFF position) |
| ⑥ | SQUELCH CONTROL | Completely counterclockwise |
| ⑦ | CHANNEL MODE SWITCH | Desired mode, I or U |

Turn the VOLUME CONTROL and POWER SWITCH clockwise to click on. A channel will be displayed on the CHANNEL and FUNCTION DISPLAY. Slowly turn the VOLUME CONTROL clockwise to a comfortable level. Set the desired channel by pushing keys.

If no signal can be heard but only noise, turn the SQUELCH CONTROL clockwise until the noise from the speaker stops and set it just below this threshold. (When adjusting the squelch control

setting, if some communication signals can be heard, change the operating channel where only noise can be heard.) The radio will now remain silent until an incoming signal is received which opens the squelch. If the squelch is unstable due to the reception of weak signals, adjust the squelch control further until the proper threshold is obtained.

For channel setting, memory channel operation and scan operation refer to the above chapters.

TRANSMITTING

Set the RF POWER SWITCH to your desired power HIGH (5 watts) or LOW (1 watt). If the lower output power (1 watt) is sufficient, push the RF POWER SWITCH in.

Select an empty channel that can be used for the type of communication you wish. Be sure the channel is open (not used).

Then set the operation channel to channel 16 by pushing the "A" (CH16) key, and after confirming that it is open, call the party you wish to contact, at this time, the letters "TX" is displayed at upper left corner of the CHANNEL and FUNCTION DISPLAY. When contact is made, go to the channel you checked before.

Hold the radio fairly close to your mouth. Depress the ⑬ PTT switch and speak in a clear, natural voice. When you have finished your part of the conversation, release the PTT switch, and the radio will return to receive mode.

When your conversation is completely finished, push the "A" (CH16) key to set channel 16.

SECTION VII OPERATING RULES AND GUIDELINES

Prevent Interference

Before transmitting, monitor the channel you wish to use to avoid interrupting transmissions in progress.

Call Procedures

Calls must be properly identified and time limits must be respected.

1. Give your call sign each time you place a call to another vessel or a coast station. (If a call sign has not been assigned, identify the station by announcing the vessel name and the name of the licensee.)
2. Give your call sign at the end of each transmission of more than 3 minutes duration.
3. You must break and give your call sign at least once every fifteen minutes during long ship to shore calls.
4. Keep your unanswered calls short (less than thirty seconds) and do not repeat a call for two minutes.
5. Unnecessary Transmissions are not allowed.

Priorities

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

False or fraudulent distress signals are prohibited and punishable by law!

Privacy

Information overheard but not intended for you cannot lawfully be used in any way. Indecent or profane language is prohibited.

Logs

Use of this equipment required entry of the watch period of 156.8MHz (CH16) by the operator with vessel name, call sign and operator signature. All distress, emergency, and safety messages must be recorded in complete detail. Log date activity is usually recorded in 24 hour time. Universal Time (formerly GMT) is frequently used.

Adjustment, repairs, channel frequency changes and authorized modifications affecting electrical operation of the equipment must be kept in the equipment log and entries signed by the authorized licensed technician performing or supervising the work. This is done in the equipment log, a small section is included in the back of this manual. Contacts are recorded in a communication log. A sample of what would be on the page is shown below.

DATE/TIME	CHANNEL	VESSEL	REMARKS	OPERATOR

Channel usage

A channel selection system, frequency-usage, has been internationally adapted for the marine VHF band. Each frequency within the spectrum has been assigned a channel number, for example, 156.300 MHz is Channel 6. Specific purposes have been assigned to each channel under this system i.e. inter-ship between two vessels and ship-to-shore. Geographical locations have specific channels assigned for use with the land telephone system.

Your selection of channels to be installed should be based on the type of contacts you plan to make within the areas you live or travel to. The chart on the following pages will aid this selection.

Each geographical area has specific channels assigned to it for use with the land telephone system.

Study the chart on the following pages, showing the available channels and their usage.

Dead Spots

Topography may prevent reception and/or transmission from some locations. Move to another location if you find a "dead spot".

Routine Maintenance

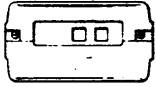
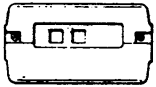
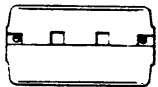
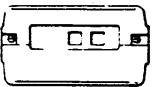
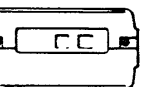
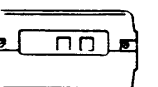
Your ICOM transceiver is designed to provide high quality performance for many years if cared for in a proper manner. Each year you should have the following checked by a licensed technician to verify your unit's performance.

1. Check antenna system.
2. Verify transmitter frequency, deviation, and power output.

CAUTION: Every effort is made to make the IC-M5 as water resistant as feasible. However, it is not fully waterproof and if left laying in a horizontal position, face up for an extended period of time in rain or direct water spray natural seepage may occur into the-electronic section of the radio.

We strongly recommend that if the radio is exposed to extended periods of rain or spray, it be in a vertical position or face down to provide the best protection for the radio.

POWER PACK SPECIFICATIONS

	CM-2	CM-3	CM-4	CM-4	CM-5	CM-7	CM-8
Cells [Capacity]	N-425A R (X 6) [450mAH]	N-250A A (X 7) [270mAH]	AA Size Alkaline (X 6)	AA Size Nickel-Cadmium (X 6)	N-425A R (X 9) [450mAH]	N-450AR x 11 (450mAH)	N-800AR x 7 (800mAH)
Voltage	7.2V	8.4V	9.0	7.2V	10.8V	13.2V	8.4V
RF Output	1.5W	2.5W	2.5W	1.5W	4.0W	5.0W	2.5W
Charging	Rapid	Normal		Normal	Rapid	Rapid	Rapid
Charging Time	1 ~ 1.5H	15H		15H	1 ~ 1.5H	1 ~ 1.5H (600mA)	2 ~ 3H (600mA)
Suitable Charger	CM-30/35	CM-30/35 CM-16U/E IC-CM1		CM-30/35	CM-30/35	[CM-35] 15H (90mA)	[CM-30/35] 15H (80mA)
Charging Current	600mA	25mA		45mA	600mA	[CM-16U/E]	[CM-16U/E]
Ambient Temp	+10° C~+40° C	0° C~+45° C		0° C~+45° C	+10° C~+40° C	+10° C~+40° C	+10° C~+40° C
Overcharge Protect	○	X		X	○	○	○
Current Selector							
Height	39m/m	39m/m	49m/m	49m/m	60m/m	80m/m	80m/m
Battery Replace	X	X	○	○	X	X	X

SECTION VIII MARINE VHF RADIOTELEPHONE CHANNEL FREQUENCIES

Channel	Ship Transmit	Ship Receive	Mode S/D	Only Intl	Only Com	USCG	Function		Type of Operation
							Ship - Ship	Ship to Shore	
1	156.050	160.650	D	yes			no	yes	Public Correspondence, Port Operation
2	156.100	160.700	D	yes			no	yes	Public Correspondence, Port Operation
3	156.150	160.750	D	yes			no	yes	Public Correspondence, Port Operation
4	156.200	160.800	D	yes			no	yes	Public Correspondence, Port Operation
5	156.250	160.850	D	yes			no	yes	Public Correspondence, Port Operation
6	156.300	156.300	S				yes	no	Safety
7	156.350	160.950	D		yes		no	yes	Public Correspondence, Port Operation
7A	156.350	156.350	S		yes		yes	yes	Port Operation
8	156.400	156.400	S		yes		yes	no	Intership
9	156.450	156.450	S				yes	yes	Port Operation
10	156.500	156.500	S		yes		yes	yes	Port Operation
11	156.550	156.550	S		yes		yes	yes	Port Operation
12	156.600	156.600	S				yes	yes	Port Operation
13	156.650	156.650	S				yes	yes	Bridge to Bridge, (1W) Navigational
14	156.700	156.700	S				yes	yes	Port Operation
15		156.750	S				Rcv	Rcv	Recv Only - Coast to Ship
16	156.800	156.800	S				yes	yes	Calling & Safety
17	156.850	156.850	S				no	yes	State Controlled - Ship to Coast (1W)
18	156.900	161.500	D	yes			no	yes	Port Operation
18A	156.900	156.900	S		yes		yes	yes	Port Operation
19	156.950	161.550	D	yes			no	yes	Port Operation
19A	156.950	156.950	S		yes		yes	yes	Port Operation
20	157.000	161.600	D				no	yes	Port Operation
21	157.050	161.650	D	yes			no	yes	Port Operation
21A	157.050	157.050	S			yes	yes	yes	Port Operation (USCG)
22	157.100	161.700	D	yes			no	yes	Port Operation
22A	157.100	157.100	S			yes	yes	yes	Port Operation (USCG)
23	157.150	161.750	D	yes			no	yes	Public Correspondence
23A	157.150	157.150	S			yes	yes	yes	Port Operation (USCG)
24	157.200	161.800	D				no	yes	Public Correspondence
25	157.250	161.850	D				no	yes	Public Correspondence
26	157.300	161.900	D				no	yes	Public Correspondence
27	157.350	161.950	D				no	yes	Public Correspondence
28	157.400	162.000	D				no	yes	Public Correspondence

Channel	Ship Transmit	Ship Receive	Mode S/D	Only Intl	Only Com	USCG	Function		Type of Operation
							Ship - Ship	Ship to Shore	
60	156.025	160.625	D	yes			no	yes	Public Correspondence, Port Operation
61	156.075	160.675	D	yes			no	yes	Public Correspondence, Port Operation
62	156.125	160.725	D	yes			no	yes	Public Correspondence, Port Operation
63	156.175	160.775	D	yes			no	yes	Public Correspondence, Port Operation
64	156.225	160.825	D	yes			no	yes	Public Correspondence, Port Operation
65	156.275	160.875	D	yes			no	yes	Public Correspondence, Port Operation
65A	156.275	156.275	S				yes	yes	Port Operation
66	156.325	160.925	D	yes			no	yes	Public Correspondence, Port Operation
66A	156.325	156.325	S				yes	yes	Port Operation
67	156.375	156.375	S		yes		yes	no	Port Operation
68	156.425	156.425	S				yes	yes	Port Operation
69	156.475	156.475	S				no	yes	Port Operation
70	156.525	156.525	S				yes	no	Intership
71	156.575	156.575	S				no	yes	Intership, Port Operation
72	156.625	156.625	S				yes	no	Intership
73	156.675	156.675	S				yes	yes	Port Operation
74	156.725	156.725	S				yes	yes	Port Operation
77	156.875	156.875	S		yes		yes	no	Intership
78	156.925	161.525	D	yes			no	yes	Port Operation
78A	156.925	156.925	S				no	yes	Port Operation
79	156.975	161.575	D	yes			no	yes	Port Operation
79A	156.975	156.975	S		yes		yes	yes	Port Operation
80	157.025	161.625	D	yes			no	yes	Port Operation
80A	157.025	157.025	S		yes		yes	yes	Port Operation
81	157.075	161.675	D	yes			no	yes	Port Operation
81A	157.075	157.075	S			yes	yes	yes	Port Operation (USCG)
82	157.125	161.725	D	yes			no	yes	Port Operation, Public Correspondence
82A	157.125	157.125	S			yes	yes	yes	Port Operation (USCG)
83	157.175	161.775	D	yes			no	yes	Public Correspondence
83A	157.175	157.175	S			yes	yes	yes	Intership, Port Operation (USCG)
84	157.225	161.825	D				no	yes	Port Operation, Public Correspondence
85	157.275	161.875	D				no	yes	Public Correspondence
86	157.325	161.925	D				no	yes	Public Correspondence
87	157.375	161.975	D				no	yes	Public Correspondence
88	157.425	162.025	D	yes			no	yes	Public Correspondence
88A	157.425	157.425	S		yes		yes	no	Intership
WX1		162.550					Rcv	Rcv	NOAA Weather (Rcv Only)
WX2		162.400					Rcv	Rcv	NOAA Weather (Rcv Only)
WX3		161.650					Rcv	Rcv	NOAA Weather (Rcv Only)
WX4(21R)		162.475					Rcv	Rcv	Canada Weather (Rcv Only)

TRANSMITTER LOG

Radio Set Serial No.	Date (Initial Reading)	Date	Date	Date	Date	Date	Date
Transmitter RF Power Output							
Transmitter Deviation							
Transmitter Frequency CH16							
Transmitter Frequency CH6							
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

TRANSMITTER LOG

	Date	Date	Date	Date	Date	Date	Date
Transmitter RF Power Output							
Transmitter Deviation							
Transmitter Frequency CH16							
Transmitter Frequency CH6							
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

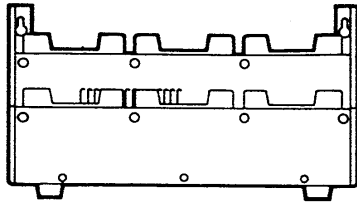
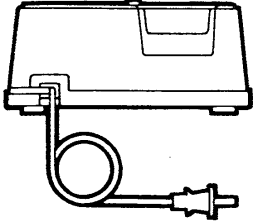
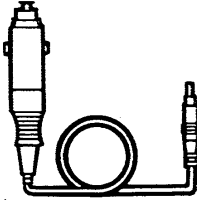
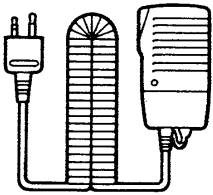
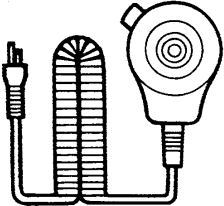
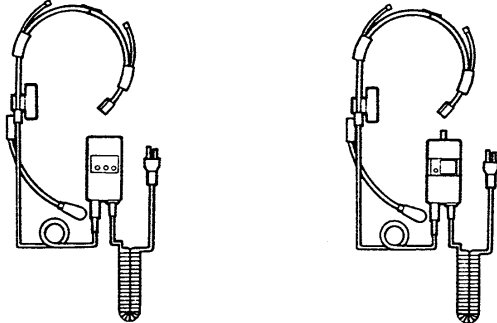
EMERGENCY USE

If your vessel requires assistance, attract the attention of other vessels and the Coast Guard by sending a distress message on Channel 16.

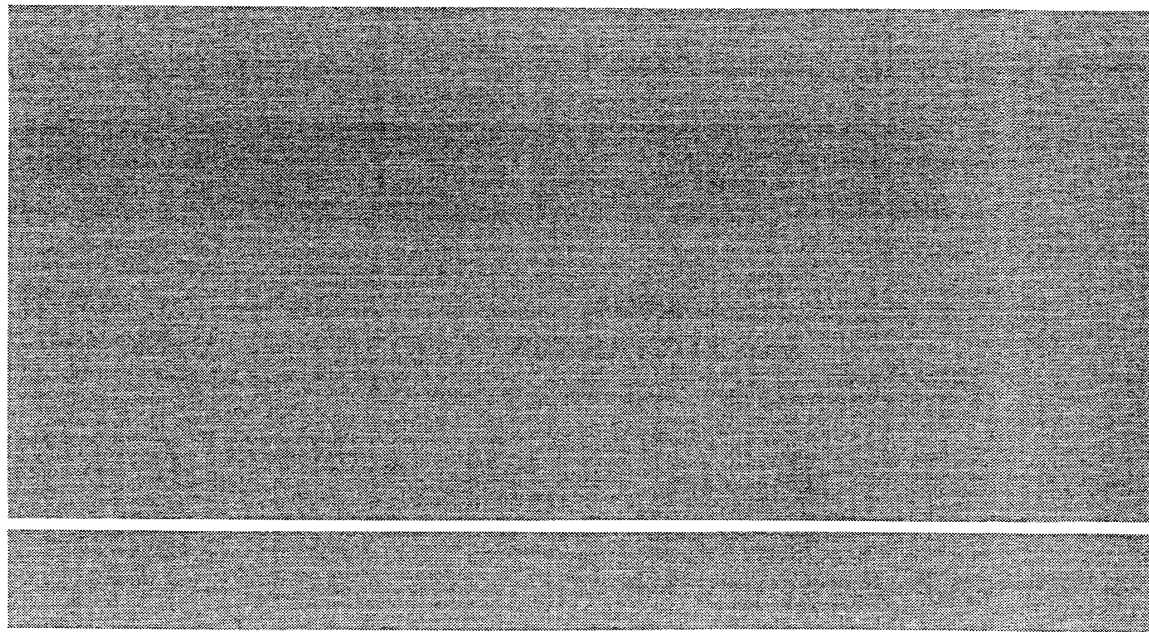
Procedures for sending a distress signal.

1. MAYDAY, MAYDAY, MAYDAY
2. THIS IS (name of the vessel).
3. LOCATED AT (gives position).
4. Give the reason for the distress call.
5. Explain what assistance you need.
6. Give additional information to help those come to your assistance, (vessel length, color, type, etc.)
7. Use Channel 16 only to make initial contact.
8. After making initial contact agree on an alternate frequency, such as Channel 22A or Channel 6 and clear Channel 16 for other traffic.

SECTION XI OPTIONS

<p align="center">CM-60A MULTI-CHARGER</p>	<p align="center">CM-35 DESK CHARGER</p>	<p align="center">IC-CM1 CIGARETTE LIGHTER CABLE</p>
		
<p>Charges up to six battery packs simultaneously.</p>	<p>Charges the supplied battery pack in 3 hours.</p>	<p>Charges the battery pack in a vehicle.</p>
<p align="center">EM-46 SPEAKER-MICROPHONE</p>	<p align="center">CM-9 HS-10 + HS-10SA or HS-10SB HEADSET + VOX UNIT or PTT SWITCHBOX.</p>	
 		
<p>Combination speaker microphone.</p>	<p>Headset with VOX (Voice Controlled) Tx/Rx switching or manual switching.</p>	

Count on us!



A-0557S-N-①
Printed in Japan
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6-9-16, Kamihigashi, Hirano-ku, Osaka 547, Japan