ICOM

Icom M25D

VHF / MARINE
RADIO TELEPHONE
OWNERS MANUAL

ICOM INCORPORATED

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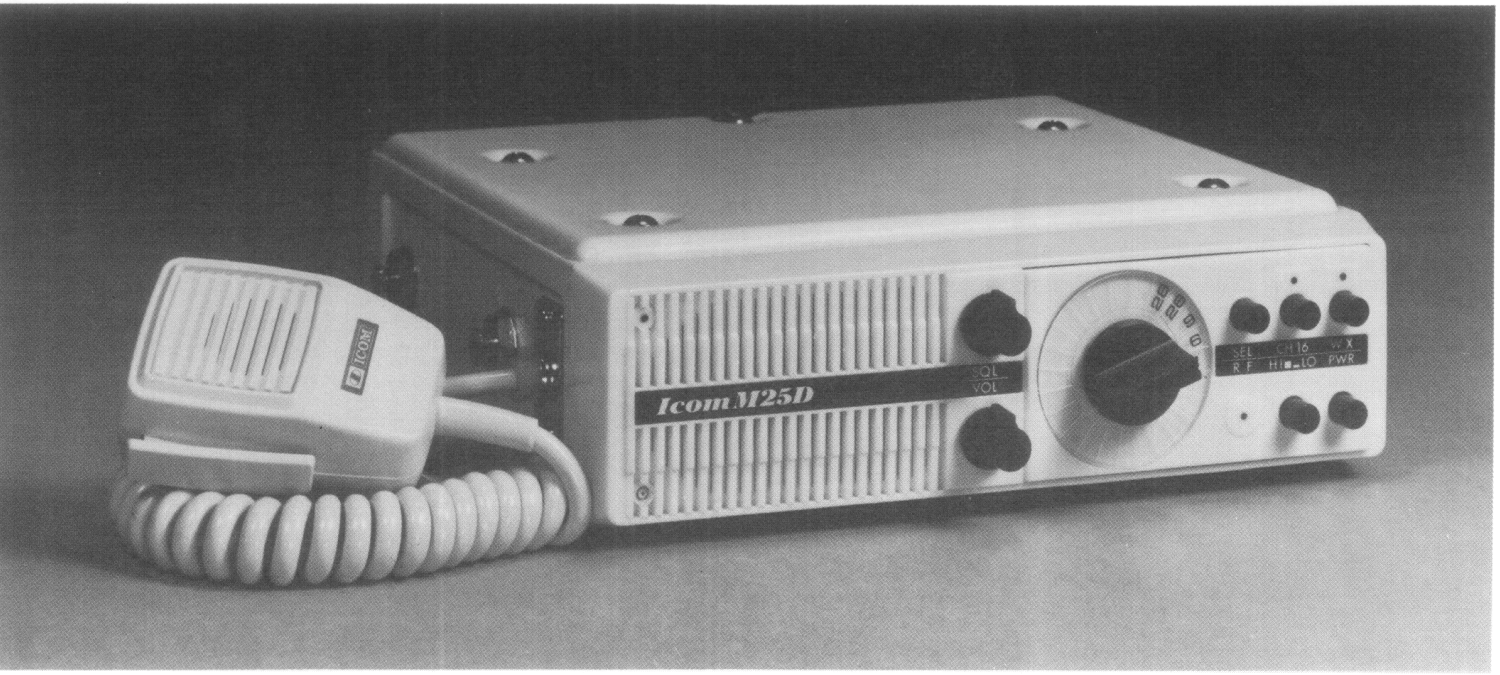


INTRODUCTION

You are now the proud owner of one of the finest VHF FM Marine Transceivers on the market today. It was designed and built by ICOM INCORPORATED, a long time leader in the field of VHF communication. We put all the technology, and experience we have gained over the years in a transceiver that was built from the ground up specifically for Marine. We know that your ICOM M25D will give you years of enjoyment and dependable communication.

FEATURES

* *24 programmable channels plus weather pre-preogrammed.*
* *All solid state including the 25 watt Power Amplifier module.*
* *Weather and dust-tight case; molded aluminum frame; heavily protected covers for lasting attractiveness.*
* *No moving controls inside - PA and RF switching are solid state.*
* *Anap-in mounting bracket; adjustable angle; lockable for security.*
* *Advanced RF front end with helical resonators; MOSFETs; and crystal/mechanical filter for adjuacent channel and inter-modulation rejection.*
* *Auto Monitor for Channel 16.*
* *High power, distortion-free audio output.*
* *Complete line of accessories available.*

SPECIFICATIONS

GENERAL

Size	3 x 9 x 9½ inches (H x W x L)
Weight	9 pounds (4.1 kgs)
Number of Channels	24 plus Weather
Stability	0.0005%
Temperature Range	−20 to +60 degrees C
Channel Spacing	25 KHz

Current Drain (Max)	Receive	
	With full 5 watt output	0.8A
	Standby	0.3A
	Transmit	
	Low output	1.5A
	High output	5.0A
Primary Voltage	13.6 Volts DC	
Antenna Impedance	50 ohms	

RECEIVER SECTION

Frequency Range	156-163MHz
Sensitivity	0.5 μV (−20dB quieting)
Selectivity	−70dB at 25KHz (EIA SINAD)
Spurious & Image Rejection	80 dB
Threshold Squelch Sensitivity	0.2 μV
Tight Squelch Sensitivity	2 μV
IF Frequencies	1st 1F: 21.4MHz 2nd IF: 455KHz
Channels	23 plus CH. 16 and Weather
Audio Output	5 watts to 4 ohm Speaker @ 10% distortion

TRANSMITTER SECTION

Frequency Range	156-157.5MHz
Channels	23 and CH. 16
Modulation	±5KHz (16F3)
RF Power Output	High 25 watts Low 1 watts
Antenna Impedance	50 ohms
Spurious & Harmonic Emissions	Spurious emission: 70dB below Carrier Harmonic emission: 60dB below Carrier
Microphone	600 ohm microphone, 40 ohm or 600 ohm handset
Audio Frequency Response	+1, −3dB of 6dB/octave pre-emphasis characteristic from 300 to 3000Hz
Audio Distortion	Less than 7% at 1000Hz for ±3KHz Deviation

INSTALLATION

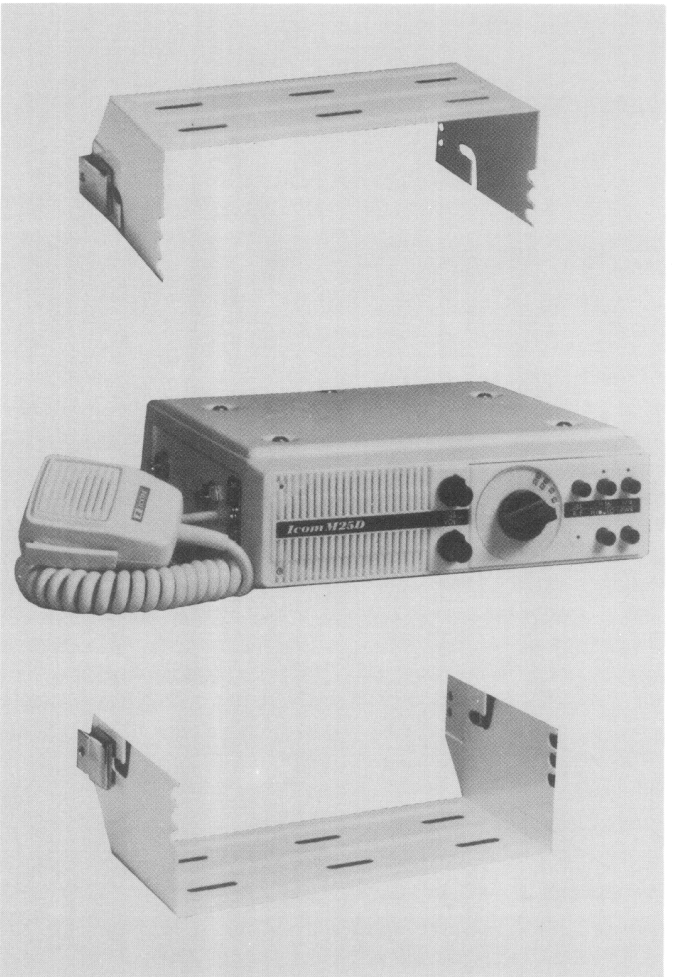
Planning

Select a location for your transceiver which will allow free access to the front controls, good air circulation and rear clearance for access to the fuse and cable connectors. Provide the best protection you can from direct rain or heavy seas.

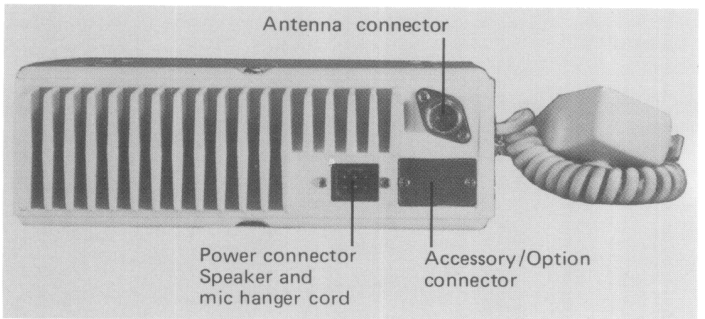
Avoid long cable runs to the antenna and power source. At the same time, keep power and antenna cables as far as possible from electrical sources i.e. generators, alternators, electrical pumps, etc. Stay away from the magnetic compass with the cables, and avoid running the antenna cable near electronic instruments.

Procedures

Your ICOM transceiver is supplied with a universal bracket which allows "over" or "under" mounting by placing the bracket where the unit is adequately supported when wave shock and vibration are considered. Your transceiver comes to you inside the mount when shipped, and the unit is easily removed by releasing the two side catches.
The mounting hardware supplied will fit most installations, but should you need special mounting fasteners any good marine supply will be able to assist. As in any marine installation it is recommended that high quality marine fasteners be used. Try to avoid drilling new mounting holes in the bracket, as balance of the set may be affected.



Electrical Connections

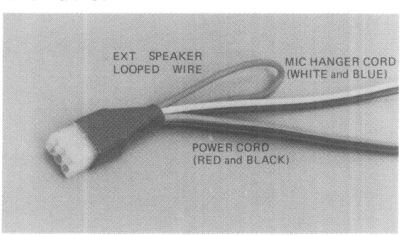


Primary Power

If at all possible, do not exceed the 10 feet length of the power cable supplied, if it is necessary to make a run of over 10 feet use the wire guage specified in the following table. Color coding of the power cable is as follows: Red is for positive (+) side of the battery, black for minus (−). The blue and white wires are for the microphone hanger; the looped wire is for connection of an external speaker. When hooking up the red and black wires make the splice as close as possible to the power side of the fuse holder, solder all connections and insure that all connections are clean tight and moisture free.

Be sure to leave a service margin in the power cable so that should the set have to be removed from the bracket it can slide out without straining the cable.

POWER INPUT CABLE	
WIRE GAUGE	MAX DISTANCE
14	15′
12	25′
10	35′
8	60′
6	100′



External Speaker

To connect the External Speaker, cut the small looped wire at the power cord/mic changer plug, and connect an 8 ohm speaker to the wires, solder them and cover with plastic tape.

Antenna

Any marine antenna of good quality and 50 ohms impedance will suffice, but the use of a gain antenna is recommended. The antenna is the single most important item that will influence the performance of the transceiver. Location is also important and should you have any doubt request the assistance of your dealer's technician. Follow the antenna marker's directions exactly. For an existing antenna, be sure that all connections are corrosion free and that all are firmly seated.

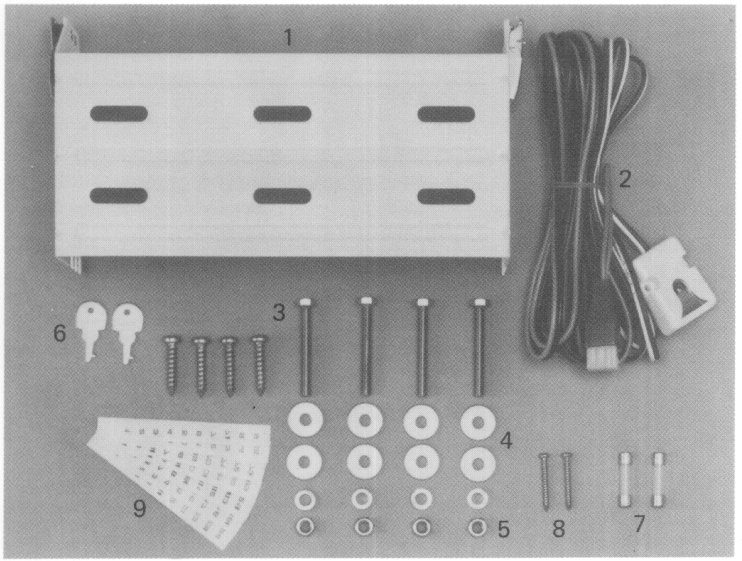
Preliminary Set up

The permanently mounted microphone attached to your transceiver should now be placed at a convenient location where the cable will neither interfere with your crafts operation while in its hanger, or in use by you or the crew. The CH 16 Auto-Monitor control cable should be routed out of the way and connected to the marked receptacle at the rear of the set.

Change or Addition of Channels

The design of your ICOM Marine Radiotelephone provides an inexpensive means for expanding channel capability. The services of a dealers technician is required for installation and alignment. The additional channel(s) you require may be placed anywhere on the dial you choose, but be sure to take along the labeling material supplied. You will find this kit in the accessories. Additional weather channels can also be installed on the dial.

Accessories



1. Mounting Bracket
2. Power Cord and Microphone Hanger Box
3. Mounting Screws
4. Mounting Washers
5. Mounting Nuts
6. Keys
7. Fuses 10A
8. Microphone Hanger Box Mounting Screws
9. Labeling Kit

PRE-OPERATION

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 radiotelephone if a licensed operator starts, supervises, ends the call, and makes necessary log entries.

   A current copy of the appropriate government agency rules and regulations is usually required to be kept.

Logs and Documents

Most countries require that a log of all contacts made over the Radiotelephone be kept. The Ship Radiotelephone Station licensee is the person responsible for compliance.

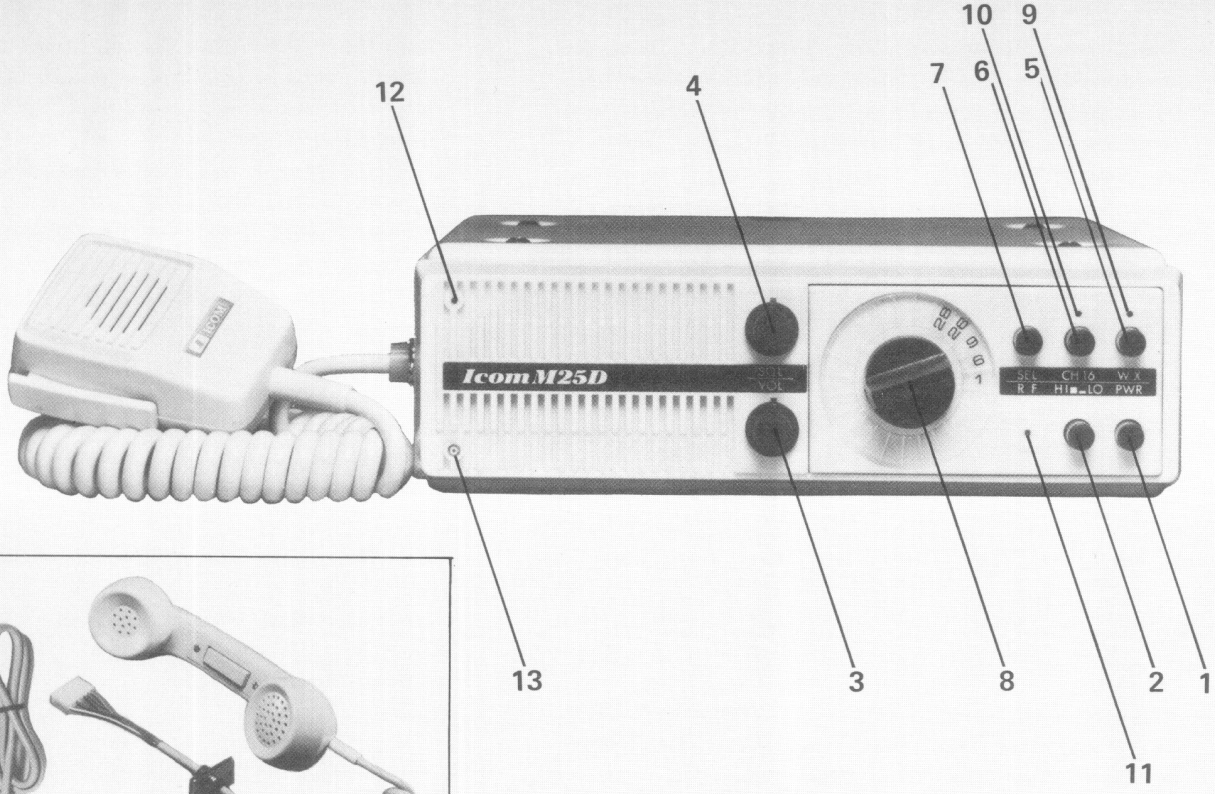
OPERATION

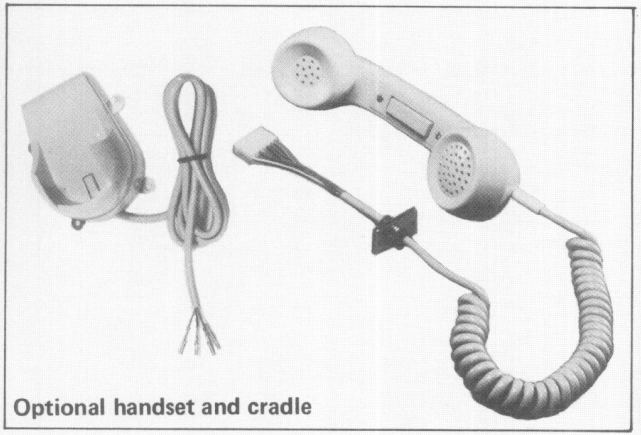
CONTROLS AND INDICATORS

1. Power ON/OFF (PWR)
   This is a double position push type switch that controls the Source Voltage applied to the radio. (The switch is "in" for the on position.)
2. Transmit High/Low Switch (HI-LO)
   Controls the transmitter output level. In the LO position, the output is 1 watt, sufficient for local communication. In the HI position, the output is a full 25 watts for long distance communication.
3. Volume (VOL)
   This controls the Audio Output level of the receiver.
4. Squelch (SQL)
   Sets the squelch sensitivity which quiets the receiver when no signal is present.
5. Weather (WX)
   Press this button momentarily to switch the receiver to the weather channel.
6. Channel 16 switch (CH 16)
   Press this button to switch the radiotelephone to Channel 16.
7. Select button (SEL)
   Press this button to switch the radiotelephone to the channel selected by the Channel Select Switch.
8. Channel Select Switch
   Rotate the switch to select one of the installed channels.
9. Weather channel indicator
   Illuminates when the Weather button is pushed, indicating that the radio is monitoring the weather channel.
10. Channel 16 indicator
    Illuminates when the Channel 16 button is pressed indicating that the Radio has switched to Channel 16 operation.
11. Transmit RF indicator
    This indicator glows indicating that actual RF is being transmitted.
12. ON/OFF indicator
    This tells you if power has been applied to the set.
13. Auto-Dimmer Photosensor
    Senses environmental light for the Auto-Dimmer system.

ADDITIONAL CONTROLS

1. Microphone Hanger Box
   Triggers the Channel 16 Auto-Monitor circuit when the microphone is replaced in the hanger.
2. Handset Cradle
   When the optional Handset is used, the internal switch mutes the front speaker and applies audio to the handset speaker. When the handset is replaced in the cradle, the internal switch turns on the front speaker and triggers the Channel 16 Auto-Monitor circuit.





Optional handset and cradle

OPERATING INSTRUCTIONS

The Channel 16 Auto-Monitor. The ICOM M25D Channel 16 Auto-Monitor circuit simplifies operation of the radio by automatically switching to Channel 16 when the mic or handset is replaced on its hanger. However, even with the mic or handset in its hanger, any channel on the channel select switch (8) or the weather channel can be monitored simply by pushing the appropriate button.

1. Press the Power On/Off switch (1) to the On position. Both the On/Off indicator (12) and the Channel 16 indicator (10) will be lit. The set is on and monitoring Channel 16.
2. Turn the Volume Control (3) fully counter clockwise.
3. Turn the Squelch Control (4) fully counter clockwise.
4. Turn the Volume Control (3) slowly clockwise until you reach a comfortable level of noise, if no signal is present, or audio if a signal is present.
5. Turn the Squelch Control carefully clockwise until the noise just disappears. (Approxmately 3 o'clock position) The radio is now set and will remain quiet until a signal appears.
6. If you wish to monitor one of the channels installed, simply push the Select button and rotate the Channel Select switch to the proper channel
7. If you wish to monitor the Weather channel, simply press the Weather button (5), the set will switch to the weather channel and the weather indicator (9) will be lit.

To Transmit

1. Push the Select button (7) and rotate the Channel Select Switch (8) until you find an empty channel that can be used for the type of communication you wish. Be sure the channel is open.
2. Push the Channel 16 switch (6), and after confirming that it is open, call the party you wish to contact. When contact is made, go to the channel on the Channel Select Switch (8) you checked before.
3. Hold the mic fairly close to your mouth and speak in a clear, natural voice. When you have finished your part of the conversation, release the PTT switch on the microphone, and the radio will receive.
4. When your conversation is completely finished, replace the mic or handset in its hanger, and the radio will automatically return to Channel 16.

(Before Transmitting, be sure that the HI-LO power switch (2) is in the proper position for the distance and needs of your contact. Use 25 watts only when necessary, to avoid interfering with others trying to use the same channel in another area.)

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 recommended.

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.

You must monitor and be able to transmit on 156.8MHz, Channel 16.

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 requires entry of the watch period of 156.8MHz (CH 16) 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 Standard Time (formerly GMT) is frequently used.

Adjustments, 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 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.

Be sure to review the channels you should have installed in your radio to give you the capability to make the type of contacts you want in the area where you live or plan to travel.

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

USER TIPS

Battery

Prevent battery drain during prolonged transmissions by keeping the vessel's engine running.

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 normal 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.

Battery voltage should be checked often. Your electrical system should be checked if voltage is less than eleven volts or more than sixteen volts at the radio.

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 Controled - 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: Ship - Ship	Function: Ship to Shore	Type of Operation
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 (Recv only)
WX2		162.400					Rcv	Rcv	NOAA Weather (Recv Only)
WX3		162.475					Rcv	Rcv	NOAA Weather (Recv only)
WX4(21R)		161.650					Rcv	Rcv	Canada Weather (Recv only)

MINOR TROUBLE SHOOTING

Your IC-M25D has been design-engineered to provide years of trouble-free operation. This has been made possible through the use of the most current technology along with ICOM's years of experience in the production of high quality, dependable VHF/FM equipment. Your IC-M25D has been specifically designed to withstand years of use in many different, extreme environments.

However, as with all marine electronic equipment, it is possible that some problems may occur that would interfere with the operation of the set. Should such a problem occur, it is recommended that your unit be taken directly to your ICOM dealer or authorized ICOM repair service center for qualified service.

Some problems may occur which may interfere with the operation of the radio that are not directly related to the electronic circuitry within your set. Below is a brief description of common problems outside of your set that may occur, and means of identifying them.

1. Antenna

If it appears that you are having unusual difficulty in transmitting or receiving properly, it is possible that the cause is due to a defective or faulty antenna system.

The most common problem that occurs with antenna systems include broken or shorted antenna cable runs, or corroded or defective connector instalation. Double check to be sure the connector is soldered to the connector and that it is not shorted.

Visually inspect these items to help isolate the problem.

A qualified technician should correct the antenna problem.

2. Power loss

If, in turning your radio to the On position, the pilot lights fail to light and no sound is heard from the radio, a common problem is low or no power from the battery source in the boat. Visually inspect the power cable from the battery for broken or short leads. Also, inspect the fuses both in the vessel's "fuse block" as well as the fuse in the power cable on the radio for corrosion or a blown fuse.

3. Microphone cable

If, in transmitting, either the voice is not heard or the transmit light is not lighting, the problem could be in the microphone cables. Inspect the mic cables for possible breaks or tears that could be the source of the problem. If such is the case, replace the mic cord.

4. Ingnition noise

Occasionally ignition noise from operation of the vessel's engine and/or occasionally refrigeration or power generating equipment may cause static interference with your radio. Ignition noise, alternator "whine" and spurious signals from other electrical devices may be found and cured by experienced technitions using known techniques and noise reduction devices.

TRANSMITTER LOG

RADIO SET SER. NO: _____	Date (Initial Reading)	Date	Date	Date	Date	Date	Date
Transmitter RF Power Output							
Transmitter Deviation							
Transmitter Frequency CH16							
Transmitter Frequency CH 6							
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

TRANSMITTER LOG

	Date	Date	Date	Date	Date	Date	Date
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

TRANSMITTER LOG

	Date	Date	Date	Date	Date	Date	Date
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

TRANSMITTER LOG

	Date	Date	Date	Date	Date	Date	Date
TECHNICIAN SIGNATURE, ADDRESS, FCC LICENSE NO., EXPIRATION DATE							

TRANSMITTER LOG

	Date	Date	Date	Date	Date	Date	Date
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 (repeat three times)
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.

ICOM INCORPORATED

1-6-19, KAMI KURATSUKURI, HIRANO-KU, OSAKA JAPAN