FURURIO OPERATOR'S MANUAL

DSC/WATCH RECEIVER

MODEL DSC-60



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(TATA) DSC-60

• FURUNO Authorized Distributor/Dealer

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DISTRESS Call Procedure

Do the following when a life-endangering situation arises on your vessel:

1. Open the DISTRESS button cover and press the [DISTRESS] button more than three seconds to show the following display, then release the [DISTRESS] button.

Distress call in progre	ess!
NATURE: UNDESIGNATED POS: 12°34N 123°45E AT 12:34 TELEPHONE 2182.0 KHZ	
DSC FREQ :	2187.5 KHZ
TIME TO GO :	38S

2. After the distress call is transmitted the following displays appear in order.



- 3. The audio alarm sounds; press the [CANCEL] key to silence the alarm.
- 4. Communicate with the coast station via radiotelephone as follows:
 - a) Say MAYDAY three times.
 - b) Say "This is ... " name of your vessel and your call sign <u>three</u> times.
 - c) Give nature of distress and assistance needed.
 - d) Give description of your vessel (type, number of persons onboard, etc.) and any other information which may aid in rescue.

For detailed information see page 3-1.

▲ SAFETY INSTRUCTIONS

🗥 WARNING



ELECTRICAL SHOCK HAZARD Do not open the equipment.

Only qualified personnel should work inside the equipment.

Immediately turn off the power at the switchboard if water leaks into the equipment or something is dropped in the equipment.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

Do not place liquid-filled containers on the top of the equipment.

Fire or electrical shock can result if a liquid spills into the equipment.

Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

Make sure no rain or water splash leaks into the equipment.

Fire or electrical shock can result if water leaks in the equipment.

🗥 WARNING

Keep heater away from equipment.

A heater can melt the equipment's power cord, which can cause fire or electrical shock.

Do not operate the equipment with wet hands.

Electrical shock can result.

IN CASE OF ACCIDENTAL TRANS-MISSION OF THE DISTRESS ALERT

If the distress is accidentally transmitted, contact the nearest coast station and inform them of the accidental transmission as follows:

- a) Ship's name
- b) Ship's call sign and DSC number
- c) Position at time of transmission
- d) Time of transmission



A warning label is attached to the equipment. Do not remove the label. If the label is missing or illegible, contact a FURUNO agent or dealer.

To avoid electrical shock, do not remove cover. No user-serviceable parts inside.

Name: Warning Label (1) Type: 86-003-1011-0 Code No.: 100-236-230



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Dec	claration of conformity to type	

Thank you for purchasing this DSC/Watch Receiver. We are confident you will discover why FURUNO has become synonymous with quality and reliability.

Dedicated in the design and manufacture of marine electronics equipment for half a century, FURUNO Electric Company has gained an unrivaled reputation as a world leader in the industry. This is the result of our technical excellence as well as our worldwide distribution and service network.

Please carefully read and follow the safety information and operating and maintenance instructions set forth in this manual before attempting to operate the equipment and conduct any maintenance. Your DSC/Watch Receiver will perform to the utmost of its ability only if it is operated and maintained in accordance with the correct procedures.

Features

Connected to an SSB radiotelephone, the DSC-60 generates and receives digital selective calls for quick and efficient establishment of distress, urgency, safety and routine communications with other ships and coast stations that install any MF/HF DSC facilities. Data is displayed on a large, easy-to-read backlit LCD. Operation is simplified by the use of few keys and easy-to-follow menus.

The main features are

- DSC Terminal, DSC Watch Receiver, DSC General Watch Receiver (option) and MF/HF Radiotelephone Remote Station all contained in a compact and light-weight cabinet.
- Fully meets GMDSS carriage requirements. Large LCD of 160-character indication.
- Conforms to the following standards and regulations:

IMO A. 694(17) IMO A. 806(19) IMO A. 813(19) IMO MSC 68(68) IEC-61097-3/8/9 IEC-60945 (3rd edition) IEC-61162-1 Edition 2 ETS-300/338 ITU-R M.493-9, M.541-8, M.1082-1

- Scan watch feature scans operator-programmed DSC frequencies.
- Remote operation optionally available.
- Automatic position and time input and update with connection of EPFS (Electronic Position-Fixing Equipment).
- Optional printer can automatically print out received messages and test results.
- Log stores 50 each of latest ordinary, distress and transmitted messages, in separate memory blocks.

- Built-in intercom function provides voice communications between the DSC-60 and SSB radiotelephone.
- Optional built-in receiver board for DSC ship's business/routine frequencies.
- One-touch testing facility.

Program number

MAIN CPU 0550201003 MODEM 0550202001

SYSTEM CONFIGURATION



Note: DISTRIBUTOR DB-120/DB-500 not necessary when using FS-5000 series radiotelephone.

1.1 What is DSC?

DSC is an acronym meaning Digital Selective Calling. It is a digital distress and general calling system in the MF, HF and VHF bands used by ships for transmitting distress alerts and general calls and by coast stations for transmitting the associated acknowledgements.

For DSC distress and safety calling in the MF and HF bands the frequencies are (kHz) 2187.5, 4207.5, 6312.0, 8414.5, 12577.0, and 16804.5.

The DSC-60 is a combination MF/HF DSC Terminal and Watch Receiver. Connected to an SSB radiotelephone, the DSC-60 sends and receives calls via the SSB radiotelephone. The built-in remote control permits control of a FURUNO radiotelephone from the DSC-60.



1.2 DSC Call

DSC calls are roughly divided in two categories: distress and safety calls, and routine calls. Below are the types of DSC calls and the pages on which their descriptions and procedures appear.

- All Ships (page 4-1)
- Distress (your ship is in distress) (page 3-1)
- Distress relay all (all ships) (page 3-18)
- Distress relay sel (coast station) (page 3-15)
- Geographical Area (page 4-20)
- Group (page 4-17)
- Individual (page 4-4)
- Medical Transport (page 4-26)
- Neutral Craft (4-24)
- Polling (page 4-28)
- Position (page 4-33)
- PSTN (page 4-39)
- Test (page 8-4)

Contents of a DSC call

Calling category

Call category	Call
Individual	Individual, PSTN, Test, Position, Polling, Relay Sel (specific coast station)
All Ships	All Ships, Neutral, Medical, Relay All
Group	Group
Geographical Area	Area

Station ID

Own ship ID and sending station ID. Coast station ID begins with 00; Group ID begins with 0.

Priority

Distress: Grave and imminent danger and request immediate assistance.

Safety: A station is about to transmit a message containing an important navigational or meteorological warning.

Urgency: A calling station has a very urgent message to transmit concerning safety of ship, aircraft or other vehicle or safety of person.

Business: Communication related to the navigation, movements and needs of ships and aircraft.

Routine: General calling

Communication type

Telephone: telephone (J3E) by SSB

NBDP-ARQ: Telex (J2B) mode ARQ via NBDP Terminal

NBDP-FEC: Telex (J2B) mode FEC via NBDP Terminal

Communication frequency

Working frequency used to call by telephone or NBDP. The sending station may have the receiving station (ship or coast station) assign the frequency to use.

Position

Position can be automatically or manually input.

DSC frequency

DSC frequency to use. If the order of communications priority is SAFETY, URGENCY and DISTRESS, select a DSC distress frequency.

End code

The end of a DSC message is denoted by ACK RQ (Acknowledge Request), ACK BQ (Acknowledge Back) or EOS (End of Sequence).

1.2.1 Distress alert call and reply

This type of call is sent by own ship in the event of distress, by pressing the [DISTRESS] button more than three seconds as follows:

1. The LED in the button initially flashes, and lights when the button is pressed more than three seconds. (If the button is pressed less than three seconds the distress alert is not sent. Once the alert is sent it cannot be cancelled.)



- 2. The DSC-60 sets the DSC distress frequency on the SSB radiotelephone and it transmits the distress alert.
- 3. After the distress alert is transmitted (about 40 seconds) the DSC-60 waits for the DIST ACK call from a coast station. This usually takes less than 3 minutes and is accompanied with an audio alarm. (If it is not received within 4.5 minutes the distress alert is re-transmitted.)
- 4. The SSB sets the DSC distress frequency to use to communicate with the coast station. With the optional handset you can communicate through the DSC-60.



- $\ensuremath{\mathbbm O}$ Ship in distress sends Distress Alert.
- $\ensuremath{\textcircled{O}}$ Coast station sends distress acknowledgement (DIST ACK).
- $\ensuremath{\textcircled{\texttt{3}}}$ Voice or telex communications between ship in distress and coast station

1.2.2 Individual call

The individual call is for sending a call to a specific station.



Basic procedure

- 1. Prepare message and transmit it by pressing the [CALL] key. The DSC-60 then awaits acknowledgement of the call.
- Receive acknowledge back (ACK BQ) signal from receiving station (coast station or ship station) within about five minutes. The audio alarm sounds at this time; press the [CANCEL] key to silence it.
- 3. After receiving ACK BQ signal, communicate with coast station; the FURUNO SSB radiotelephone sets the working frequency and class of emission specified by your ship.

1.3 Audio Alarms

When you receive a distress alert or routine call addressed to your ship the audio and visual alarms are released. For the distress or urgent call, the audio alarm sounds until the [CANCEL] key is pressed. For other calls, the audio alarm sounds for one second and then automatically goes off.

The tone of the alarm depends on the call received. By becoming accustomed to the tone you can know which type of call you have received.

Alarm	Frequency (interval)
Safety message received	1300 Hz and 0 Hz (250 ms)
Routine, Ship's Business message received	880 Hz and 440 Hz (500 ms)
While DISTRESS button is pressed for three seconds	2200 Hz and 0 Hz (125 ms)
Distress alert is being sent	2200 Hz, continuous
Own ship position not updated	2200 Hz (50 ms), three beeps every two seconds

1.4 Remote Control and Automatic Acknowledge

1.4.1 Remote control

The DSC-60 and a FURUNO SSB radiotelephone communicate with each other by means of the MIF (FURUNO Radio Interface) protocol, a unique handshaking type signal exchange system developed by FURUNO. The DSC-60 can also communicate with other makes of radiotelephones which incorporate data format IEC-61162-1. The remote control feature allows the DSC-60 to automatically set the DSC and working frequencies and class of emission on a FURUNO SSB radiotelephone.

1.4.2 Automatic acknowledge

The automatic acknowledge feature, when turned on, automatically transmits the acknowledge back signal to the sender when an individual, position or polling call is received. With the automatic acknowledge feature turned on the remote control is also turned on.

Automatic acknowledge is alternately enabled or disabled with the [5/ACK] key.

1.4.3 Both remote control and automatic acknowledge ON

The illustration and table below outline the sequence of events in an individual call when both remote control and automatic acknowledge are turned on.



* FURUNO SSB radiotelphone

DSC operation	Radiotelephone frequency ${\mathbb O}$	Radiotelephone frequency@
1. DSC-60 ^① [CALL] key pressed.	DSC frequency changed; call sent.	Scans DSC frequencies.
2. DSC-60 [®] receives via radiotelephone.		Sets DSC frequency received.
3. DSC-60 [®] automatically sends acknowledge back (ACK BQ) signal.		DSC frequency set; ACK BQ sent. Then, working frequency and class of emission specified at DSC-60 ^① are set.
4. DSC-60① receives acknowledge back signal via radiotelephone.Working frequency and class of emission specified at DSC-60① are set.		
Both communication frequency and class of emission are already set on the FS-1562 $\mbox{\ 0}$ and FS-1562 $\mbox{\ 0}$, so you may begin communications.		

1.5 Interpreting Call Displays

This paragraph provides the information necessary for interpreting receive and send calls.

1.5.1 Receive calls

Below are sample distress and individual receive calls. Content of other receive calls is similar to that of the individual call.

Distress call



Individual call



1.5.2 Send calls

Below are sample distress and individual send calls. Content of other send calls is similar to that of the individual call.

Distress call



1.6 Remote Control of SSB Radiotelephone

SSB output power at transmission of distress alert

When the [DISTRESS] button is pressed, the output power of the FURUNO SSB radiotelephone is automatically set to maximum, even if it is set for minimum.

Keyboard lock at the SSB radiotelephone

The keyboard of the FURUNO SSB radiotelephone is automatically locked while a DSC message is being transmitted.

- Distress alert or distress relay transmitted (transmission time about 40 seconds) The keyboard is locked until the transmission of the distress alert or distress relay is completed.
- Call other than distress is transmitted (transmission time about 8 seconds) Press the [CANCEL] key to unlock the keyboard.

This page is intentionally left blank.

2.1 Controls, LED Description



Control, LED description

Control	Function
POWER switch	Turns the power on/off.
DISTRESS button	Press and hold down the button more than three seconds to transmit the distress alert. When pressed it initially flashes, and lights up if the button is pressed more than three seconds. It stays lit until your ship receives the distress acknowledge message. The distress alert will not be transmitted if the button is pressed less than three seconds.
CALL key	Transmits calls other than distress.
Cursor Pad	Selects items on menus; adjusts loudspeaker volume (64 levels) on the DSC standby screen. (The distress and urgency alarms are received at maximum volume regardless of current loudspeaker volume setting.)
ENT key	Registers key input.
CANCEL key	 Cancels wrong data. Restores previous menu. Returns to DSC standby screen from other screen. Silences audio alarm (distress or routine). Cancels transmission, printing. Erases error message.
1/ RT/2182 key	Switches from the DSC standby screen to the radiotelephone setting screen.
	 Switches to 2182.0 kHz/J3E on radiotelephone setting screen by pressing more than two seconds.
2/DSC key	Switches from the radiotelephone setting screen to the DSC standby screen.
3/TEST key	Executes daily test.
4/IntCom key	Turns intercom with radiotelephone on/off, from the radiotelephone setting screen.
5/ACK key	Switches automatic and manual acknowledge alternately at the DSC standby screen.
6/SCAN key	Starts/stops scanning of DSC routine frequencies at the DSC standby screen.
7/吖 key	 Turns loudspeaker on/off. Silences buzzer. Note that this key does not silence the distress or urgency alarm.
8/PRINT key	Prints communications log files, current screen (except DSC standby screen and radiotelephone setting screen) and test results.
9/ 🛞 key	Adjusts keyboard/LCD backlighting and LCD contrast.
*/FILE key	Opens the send message file from the DSC standby screen, to send stored message.
	Selects station or coast ID when preparing an individual message.
0/LOG key	Opens the Tx/Rx log file from the DSC standby screen.
#/SETUP key	Opens the Setup menu from the DSC standby screen.
ALARM lamp	Flashes in red for distress or urgency call.
	Flashes in green (more rapidly) for safety or routine call.
OVEN lamp	Lights (in green) when oven power is on.

2.2 Turning the Power On/Off

Press the [POWER] switch at the right-hand side of the equipment to turn the power on or off. Whenever the power is applied the DSC standby screen appears.

2.3 DSC Standby Screen, Radiotelephone Setting Screen and Their Indications

2.3.1 DSC standby screen

The DSC standby screen appears by pressing the [2/DSC] key. This is where you begin all calling operations.



2.3.2 Radiotelephone setting screen

The radiotelephone setting screen appears by pressing the [1/ RT/2182] key. This is where you set up the radiotelephone.



Radiotelephone setting screen

Note: "Tx" pops out when the radiotelphone is transmitting.

2.4 Panel Backlighting, LCD Contrast and Brightness

1. At the DSC standby screen or radiotelephone setting screen, press the [9/ (B)] key. The following display appears.



- 2. Use ▲ to increase the panel backlighting, LCD brightness; to lower it. Current backlighting setting is shown in both digital and analog indications below DIMMER.
- 3. Use ◀ to lower the LCD contrast; ► to raise it. Current contrast setting is shown in both digital and analog indications below CONTRAST.
- 4. Press the [ENT] key to finish and return to the screen previously in use.

2.5 Loudspeaker, Buzzer On/Off

- 1. Display the DSC standby screen or radiotelephone setting screen.
- 2. Press the [7/^[4]] key to turn the loudspeaker and the alarm generated for ordinary messages (others than distress and urgency) on/off. The message SOUND: ON or SOUND: OFF appears with each pressing of the key. The indication OFF appears at the lower-right side of the DSC standby and radiotelephone setting screens when the loudspeaker is turned off.



Note: The volume setting is set to 5 and the loudspeaker is ON whenever the unit is powered on.

2.6 Starting, Stopping Scanning DSC Routine Frequencies

Press the [6/SCAN] key at the DSC standby screen to start or stop scanning DSC routine frequencies. The DSC routine frequencies to scan can be selected through the menu. Note that scanning of DSC distress frequencies cannot be stopped.



Note: DSC routine frequencies may not be received when optional receiver board (for receiving DSC routine frequencies) is installed and you receive a distress signal when you are close to the sender of the frequency.

2.7 Automatic Acknowledge On/Off

The automatic acknowledge feature, when turned on, automatically transmits the acknowledge back (ACK BQ) signal to the sender when an individual, position, or polling call is received. (For position and polling calls, respective item on the AUTO ACK menu must be turned on to enable automatic acknowledge.) It can be turned on or off at the DSC standby screen by pressing the [5/ACK] key. The message AUTO ACK or MANUAL ACK appears at the top-right corner of the DSC standby screen with each press of the key.



Note 1: To give communications priority to own ship's communications while own ship is communicating, select MANUAL ACK.

Note 2: Automatic acknowledge is not possible under the following conditions:

Priority: Distress, Urgency or Safety Com Type: Morse, Fax, Data, No Info Com Freq: No Info Off Hook

2.8 Intercom On/Off

The built-in intercom permits voice communications between the DSC-60 and the SSB radiotelephone to which it is connected.

- 1. Display the radiotelephone setting screen.
- 2. Off hook the handset.
- 3. Press the [4/IntCom] key. You can begin communications with the SSB radiotelephone.



4. Hang up the handset when finished with communications to turn the intercom off. The indication INTERCOM disappears from the radiotelephone setting screen when the intercom is turned off.

Note: If you are called from other onboard SSB radiotelephone, a beep sounds. Off hook the handset and begin communications.

2.9 Selection of On-screen Items

Menu and calling operations are executed by selecting on-screen items. The example below shows how to select items and options from the Alarm menu.

1. Press the [#/SETUP] key to display the Setup menu.

**** Setup menu ****			
ALARM	SCAN FREQ		
AUTO ACK	USER CH		
ERASE	VOLUME		
MESSAGE			
POSITION	TEST		
PRINT OUT	SYSTEM		

2. Use the Cursor Pad to select a menu and then press the [ENT] key. For example, select the ALARM menu.

****	Alarm set	tup ***	
INTERNAL AUDIO ALARM			
RCVD	CALL	: ON	
OLD P	OSITION	: ON	
POSITIC	ON OLDER	: 4.0 H	
EXT ALARM: DSTRS/URG			



- 4. Use \checkmark or \checkmark to select option.
- 5. Press the [ENT] key to register your selection and the [CANCEL] key twice to return to the DSC standby screen.

2.10 Manual Entry of Position and Time

If there is no EPFS (Electronic Position-Fixing System) connected to the DSC-60 or the EPFS connected is inoperative, manually enter position and time as follows:

1. At the DSC standby screen, press the [#/SETUP] key to display the Setup menu.

**** Setu	o menu ****	
ALARM	SCAN FREQ	
AUTO ACK	USER CH	
ERASE	VOLUME	
MESSAGE		
POSITION	TEST	
PRINT OUT	SYSTEM	

2. Select POSITION and press the [ENT] key to display the Position menu.



3. Press the [ENT] key to open the INPUT TYPE menu.



Note 1: If, when AUTO is selected, input from the navigator is interrupted the message "EPFS error!" appears. If this occurs check the navigator.

Note 2: If, when MANUAL is selected, the message "Warning: Update position" appears at set intervals to ask you to update position. For further details see page 7-2.

- 4. Press ▼ to select MANUAL and press the [ENT] key.
- 5. Press the [ENT] key to open the latitude entry window.

**	Position setup	**
INPUT LAT : LON : TIME:	TYPE: MANUAL 34 84 ° 41 N 135 00 LAGT 09: 00 UTC	

- 6. Enter latitude in four digits and press the [ENT] key.
- 7. Press the [ENT] key to open the longitude entry window.

** Position se	tup **
INPUT TYPE: MANU LAT : 34° 41 NORT LON : 135 135°00 E TIME: 09: 00 010	

- 8. Enter longitude in five digits and press the [ENT] key.
- 9. Press the [ENT] key to open the time entry window.

**	Position setup	**
INPUT	TYPE: MANUAL	
LAT :	34° 41 NORTH	
LON :	135° 30 EAST	
TIME:	09 12 · 34	
	<u>1</u> 2.04	

10. Enter UTC time and press the [ENT] key. The Setup menu appears.

2.11 Remote Control of FURUNO SSB Radiotelephone

A FURUNO SSB radiotelephone can be controlled from the radiotelephone setting screen, which may be displayed by pressing the [1/ RT/2182] key. You can enter desired frequency by designating channel as below or entering Tx and Rx frequencies as on the next page. The handset may be ON HOOK or OFF HOOK.

Note1: To set the SSB radiotelephone to 2182 kHz/J3E, press the [1/ RT/2182] key more than 2 sec.

Note2: In RT screen, "INCOMING" appears at lower left-hand side of the RT screen when the DSC message is received.

Mode selection

- 1. Press the [1/ RT/2182] key to display the radiotelephone setting screen.
- 2. Select the MODE field with the Cursor Pad and press the [ENT] key.
- 3. Select mode desired and press the [ENT] key.

TELEPHONE: Telephone NBDP/DSC: NBDP Terminal, DSC Terminal FAX: Facsimile AM RADIO: AM radio



Channel selection

Channel cannot be selected when the MODE is FAX.

1. Select the CH field and press the [ENT] key.



2. Channel can be entered directly with the numeric keys, or with the cursor pad.

By numeric keys

Use the numeric keys to enter band and channel and then press the [ENT] key.

By Cursor Pad

- a) Press 4 to shift the cursor to the band entry location.
- b) Use \blacktriangle or \checkmark to set band. Band is displayed in the following sequence.

- c) Press ►.
- d) Use \blacktriangle or \checkmark to set channel.
- e) Press the [ENT] key. The Tx and Rx frequencies of the channel entered appear.

Setting Range	
ITU Band:	2/4/6/8/12/16/18/24/25
User Band:	01-029
ITU Channel:	XX001 - XX193
User Channel:	XXX01 - XXX99

Tx/Rx frequency selection

Select the Tx or Rx field and press the [ENT] key. Enter desired frequency with the numeric keys. Press the [ENT] key to finish.

Note: If you enter the Tx frequency, the same frequency is entered to the Rx frequency.



Power selection

Select the POWER field with the Cursor Pad and press the [ENT] key. Select power desired among HIGH, MID and LOW with the Cursor Pad and press the [ENT] key.



Note: Some FURUNO SSB radiotelephones do not provide the power selection HIGH, MID or LOW.

<u>Tuning</u>

Select the TUNE field with the Cursor Pad and press the [ENT] key. Tuning is automatically executed, showing TUNING while tuning. The results are shown as TUNE: OK or TUNE: NG (No Good).



Note: When receiving distress and safety calls with the radiotelephone ON HOOK, specified distress and safety frequency is selected automatically. When receiving distress and safety call during with the radiotelephone OFF HOOK, only a corresponding message appears. To answer the call, press the [5/ACK] key. To return to the radiotelephone setting screen, press the [CANNEL] key.

3.1 Sending Distress Alert

3.1.1 Sending distress alert by DISTRESS button

GMDSS ships carry a DSC terminal with which to transmit the distress alert in the event of a life endangering situation onboard ship. A coast station receives the distress alert and sends the distress alert acknowledge message to the ship in distress. Then, voice or telex communications between the ship in distress and coast station begins, via the radiotelephone.

This equipment comes in two versions, International (default) and Russian, and the procedure for sending the distress alert is different for each version.

Russian version

- 1) Alarm is released continuously after transmitting distress alert.
- 2) The [CANCEL] key can be used during the transmission of distress alert. The transmission sequence is stopped at the end of the fifth transmission.

Transmission of the distress alert and receiving of distress alert acknowledgement are completely automatic - simply press the [DISTRESS] button to initiate the sequence.

1. Open the DISTRESS button cover and press and hold down the [DISTRESS] button more than three seconds. The button flashes in red and the buzzer sounds rapidly. The display shows the contents of the distress alert call: your ship's nature of distress and position, time, and DSC frequency used to transmit the alert.

The number of seconds to continue pressing the [DISTRESS] button appear at the bottom of the display. The buzzer sounds continuously and the lamp in the button lights when the button has been pressed three seconds. You can release the button at that time.



2. The display changes as below. It takes about 40 seconds to complete transmission of the distress alert, and the number of seconds until transmission is completed is shown at the bottom of the display.

At this time the output power of the radiotelephone is automatically set to maximum.

Distress call in progr	ress!	
NATURE: UNDESIGNATED POS: 12°34N 123°45E AT 12:34 TELEPHONE 2182.0 KHZ		
DSC FREQ :	2187.5 KHZ	
TIME TO GO :	38S	
Time to go until	distress	

3. After the distress alert has been sent the display changes as below. This is where the equipment waits to receive the distress acknowledge message from a coast station, which usually takes about one minute to three minutes. (The [DISTRESS] button remains lit until the DSC-60 receives the distress acknowledge message from a coast station.) The timer counts down the number of minutes to wait, from 3.5 to 4.5 minutes, randomly set.

At this time the DSC-60 cannot receive any messages except the distress alert acknowledge message. Distress message is recorded in the Tx log.



4. When the distress acknowledge call is received the audio alarm sounds and the display changes as below.

Distress acknowledge		
FROM COAST: 001234567		
SHIP IN DIST: 123456789		
NATURE: UNDESIGNATED POS: 12°34N 123°45E AT 12:34		
TELEPHONE	2182.0 KHZ	
	STOP ALARM	

Note: If you do not receive the distress alert acknowledge call, the DSC-60 re-transmits the distress alert and then awaits the distress alert acknowledge call. This is repeated until the distress alert is acknowledged.
5. Silence the alarm with the [CANCEL] or [ENT] key. The receive message appears as in the figure below.



- 6. Communicate with the coast station via radiotelephone, which is automatically set to working frequency and class of emission (telephone) specified in the distress acknowledge message.
 - a) Say MAYDAY three times.
 - b) Say "This is ... " name of your vessel and call sign three times.
 - c) Give nature of distress and assistance needed.
 - d) Give description of your vessel (type, color, number of persons onboard, etc.).

3.1.2 Sending distress alert with nature of distress specified

If you have the time to designate the nature of distress, send the distress alert as follows:

1. Open the DISTRESS button cover and press the [DISTRESS] button with a touch-andrelease action. The following display appears.





- 3. Press the [ENT] key to open the POS. menu. This is where you enter your position, automatically or manually. If the positioning device is connected, INPUT TYPE is AUTO and the position is correct, press the [ENT] key twice and go to step 12. Note that "INPUT TYPE: MANUAL" appears when position is input manually.

**	Position setup	**
INPUT	TYPE: AUTO	
LAT	: 34° 41 NORTH	
LON	: 135° 30 EAST	
TIME	E: 09:00 UTC	

Note: If the message "NO POSITION DATA" appears when you change INPUT TYPE from MANUAL to AUTO, confirm the navigation device and select AUTO again.

4. Press the [ENT] key to open the INPUT TYPE menu.



- 6. Press the [ENT] key to open the latitude entry window.

**	Position setup	**	
INPUT LAT : LON : TIME	TYPE: MANUAL 34 34 ° 41 N 135 30 LAST : 09: 00 UTC		Note: Use ▼ North to SoutI

- 7. Key in latitude in four digits and press the [ENT] key.
- 8. Press the [ENT] key to open the longitude entry window.



- 9. Key in longitude in five digits and press the [ENT] key.
- 10. Press the [ENT] key to open the time entry window.



11. Key in UTC time and press the [ENT] key.

Note: If you cannot confirm time, enter 88:88 to input NO INFO as the time in the distress alert.

12. The SEND MESSAGE screen is redisplayed. Press the [ENT] key to open the COM. TYPE menu.



- 13. Select TELEPHONE and press the [ENT] key. (Telephone is the usual mode, however NBDP may also be used.)
- 14. Press the [ENT] key to open the DSC FREQ menu.



15. Select a DSC frequency (normally 2187.5 kHz) and press the [ENT] key. (AUTO retransmits the distress alert on 2 MHz, 8 MHz, 16 MHz, 4 MHz, 12 MHz and 6 MHz in sequence if the distress alert is not acknowledged. The frequency and mode of emission should be set manually on the radiotelephone when there is "No response: RT"

DSC	SSB radiotelephone	NBDP-FEC
2187.5 kHz	2182.0 kHz	2174.5 kHz
4207.5 kHz	4125.0 kHz	4177.5 kHz
6312.0 kHz	6215.0 kHz	6268.0 kHz
8414.5 kHz	8291.0 kHz	8376.5 kHz
12577.0 kHz	12290.0 kHz	12520.0 kHz
16804.5 kHz	16420.0 kHz	16695.0 kHz

16. The display changes as below.

*** Send message ***			
CALL TYPE: DISTRESS			
NATURE: FLOODING			
POS: 35°N 135°00E AT 23:25			
COM. TYPE	:	TELEPHONE	
DSC FREQ	:	2187.5 KHZ	
	G	O TO ALL VIEW	

17. Press the [DISTRESS] button more than three seconds to send the distress alert.

Distress call in progress!	
NATURE: FLOODIN POS: 12°34N 123°45E TELEPHONE	NG E AT 12:34 2182.0 KHZ
DSC FREQ :	2187.5 KHZ
TIME TO GO :	38S

18. Follow steps 3-6 on page 3-2 and 3-3.

3.2 Receiving a Distress Alert

When you receive a distress call from a ship in distress the audio alarm sounds and the message "Distress call received." appears on the display. Press the [CANCEL] key to silence the audio alarm. Wait for the distress acknowledge from a coast station. If you do not receive the distress acknowledge from a coast station, which usually takes about five minutes from reception of a distress alert, follow the appropriate flow chart in this section.

Note: An asterisk (*) appearing in a distress alert messages indicates error at asterisk location.

Russian Version

If another distress alert or urgent message is received just after pressing the [CALL] key (for distress alert relay and distress acknowledgement), the most recently received message has priority.

3.2.1 Distress alert received on MF band

Do the following:

- Continue watching on 2182 kHz. Wait for coast station to acknowledge the distress call. Distress communications continues until "SEELONCE FINI" is announced.
- If further DSC alerts are received from the same source and the ship in distress is beyond doubt in vicinity, a DSC acknowledgement may, after consultation with an RCC or Coast Station, be sent to terminate the call.
- In no case is a ship permitted to transmit a DSC distress relay call on receipt of a DSC distress alert on either VHF channel 70 or MF channel 2187.5 kHz.

Action for ship receiving MF distress alert



Sending the distress acknowledge to ship in distress on MF band

Transmit the distress acknowledge signal to the ship in distress only when you do not receive it from a coast station and you are able to aid the ship in distress. First, transmit the distress acknowledge to the ship in distress by telephone. This will stop transmission of the distress alert.

1. The audio alarm sounds and the display shows the message "Distress call received." When your ship receives a distress call.



2. Press the [CANCEL] key to silence the audio alarm, and the display changes as below.

* Received message *		
JUL-23-1999-23:59 ECC: OK		
DISTRESS CALL		
SHIP IN DIST: 123456789		
NATURE: UNDESIGNATED		
POS: 12°34N 123°45E AT 12:34		
TELEPHONE	8414.5 KHZ	
ANSWER	ALL VIEW	

- If you do not receive the distress acknowledge from a coast station and you have received the distress alert more than twice, press

 to choose ANSWER and press the [ENT] key to send the distress acknowledge signal to the ship in distress.
- 4. Press the [ENT] key to open the CALL TYPE menu.



The option ACKNOWLEDGEdoes not appear in the following cases:a) Distress alert received on HF band.b) If, on MF band, more than 2 min. 45 sec.elapses after the distress alert is received.

5. Select ACKNOWLEDGE and press the [ENT] key. The following display appears.

*** Send message ***		
CALL TYPE : ALL SHIPS DISTRESS ACKNOWLEDGE SHIP IN DIST : 123456789		
DSC FREQ : 2187.5 KHZ		
GO TO ALL VIEW		

6. Press the [CALL] key to send the distress acknowledge call to the ship in distress. Note that the distress acknowledge is immediately sent when the time elapsed between reception and transmission of it is more than one minute. If the [CALL] key is pressed before one minute has elapsed a timer appears and counts down the time remaining before the call is sent.

Distress acknowledge call in progress!		
SHIP IN DIST : 123456789		
DSC FREQ	:	2187.5 KHZ
GO TO ALL VIEW		

3.2.2 Distress alert received on HF band

If you receive a distress signal on HF band, the ALARM lamp lights and the audio alarm sounds. Press the [CANCEL] key to silence the audio alarm. Wait for the distress acknowledge from a coast station. If you do not receive it within five minutes do one of the following:

- Watch on the distress frequency.
- Relay the distress alert in the following cases.
 - You do not receive distress acknowledge call from coast station within five minutes after receiving distress call.
 - You have not received distress relay from other ship.
 - You cannot receive distress communications from other ship over radiotelephone.
 - If it is clear the ship or persons in distress are not in the vicinity and/or other crafts are better placed to assist, superfluous communications which could interfere with search and rescue activities should be avoided. Details should be recorded in the appropriate log book.
 - The ship should establish communications with the station controlling the distress as directed and render such assistance as required and appropriate.

Action for ships receiving HF distress alert



Sending the distress relay to coast station on HF band

1. The audio alarm sounds and the display changes as below when a distress call is received.

Distress		
call received.		
SHIP IN DIST:	123456789	
NATURE: UNDES	IGNATED	
POS: 12°34N 123	°45E AT 12:34	
TELEPHONE	8291.0 KHZ	
9	TOP ALARM	

2. Press the [CANCEL] key to silence the audio alarm, and the display changes as below.

* Received message *			
JUL-23-1999-23:59	ECC: OK		
DISTRESS CALL			
SHIP IN DIST:	123456789		
NATURE: UNDESIGNATED			
POS: 12°34N 123	3°45E AT 12:34		
TELEPHONE	8291.0 KHZ		
ANSWER 4	ALL VIEW		

- 3. Press 4 to choose ANSWER and press the [ENT] key.
- 4. Press the [ENT] key to open the CALL TYPE menu.



5. Select RELAY COAST (if you know the ID of the nearest coast station) and press the [ENT] key.



6. Key in ID of coast station where to send the distress relay and press the [ENT] key.

7. Press the [ENT] key to open the DSC FREQ. menu.

*** Send message ***		
CALL TYPE DISTF COAST ID: SHIP IN DIST DSC FREQ	2187.5 4207.5 6312.0 8414.5 12577.0 16804.5 MANUAL	(HZ

MANUAL: For manual selection of frequency at the radiotelephone when there is "remote control error."

- 8. Select appropriate frequency and press the [ENT] key. You should first select 8414.5 kHz.
- 9. Press the [CALL] key to relay the distress call.

Note: If a coast station acknowledges the distress alert call before the timer counts to zero, press the [CANCEL] key to cancel your call. Further, If the call key is pressed before five minutes has elapsed the time to wait until the distress relay is sent is shown at the bottom of the display.

10. While the distress relay sel (to coast station) call is being sent the display shows the following.

Distress relay sel call in progress!		
SHIP IN DIST: 123456789		
DSC FREQ :	2 187.5 KHZ	
TIME TO GO : 25S		

11. After the call is transmitted the message "Wait for distress relay acknowledge!" appears. When you receive distress acknowledgement from the coast station communicate with the coast station by telephone, over the DSC frequency specified. If you do not receive the distress acknowledgement from a coast station after the timer counts down to zero, repeat the transmission on a different frequency.

3.3 Sending Distress Relay on Behalf of a Ship in Distress

3.3.1 Sending distress relay to coast station

You may send the distress relay to a coast station on behalf of a ship in distress in the following cases:

- You are near the ship in distress and the ship in distress cannot transmit the distress alert.
- Another vessel requests you to transmit the distress relay.

In these cases never use the [DISTRESS] button to transmit the distress relay.

Russian Version

If another distress alert or urgent message is received just after pressing the [CALL] key (for distress alert relay and distress acknowledgement), the most recently received message has priority.

1. Press the [CALL] key and press the [ENT] key.



Select RELAY SEL and press the [ENT] key. Press the [ENT] key to open the COAST ID entry window.

*** Send message ***			
CALL TYPE: RELAY SEL			
COAST ID			
ID IN DIST	00		
NATURE: UN			
POS: 34°45N	15		
COM. TYPE	: TELEPHONE		
DSC FREQ.	: 8414.5 KHZ		
	GO TO ALL VIEW		

- 3. Key in COAST ID and ID and press the [ENT] key.
- 4. Press the [ENT] key to open the ID IN DIST window.



5. Key in ID of ship in distress and press the [ENT] key. If you do not know the ID leave the window blank.

6. Press the [ENT] key to open the NATURE menu.



▲
SINKING
DISABLE
ABANDONING
PIRACY
MAN OVERBOARD
EPIRB EMISSION

7. Select nature of distress and press the [ENT] key. (If you do not know the nature of distress, select UNDESIGNATED.) Press the [ENT] key to open the POS. menu.



- 8. Enter position following 1), 2) or 3) below.
 - 1) For automatic input, press the [ENT] key twice.
 - **2)** For manual input, press the [ENT] key to open the INPUT TYPE menu, select MANUAL and press the [ENT] key. Enter latitude, longitude of ship in distress and time as follows:
 - a) Press to select LAT and press the [ENT] key. Enter latitude and press the [ENT] key.
 - b) Press ▼ to select LONG and press the [ENT] key. Enter longitude and press the [ENT] key.

c) Press to select TIME and press the [ENT] key. Enter UTC time and press the [ENT] key. **Note:** If you cannot confirm time, enter 88:88 to input NO INFO as the time.

- **3) If you cannot confirm ship in distress position,** press the [ENT] key to open the INPUT TYPE menu, select NO INFO and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. TYPE menu.



10. Select TELEPHONE and press the [ENT] key. (NBDP may also be used.) Press the [ENT] key to open the DSC FREQ menu.

*** Send message ***			
CALL TYPE COAST ID: ID IN DIST: NATURE: POS: COM. TYPE:	2187.5 4207.5 6312.0 8414.5 12577.0 16804.5	,	
DSC FREQ			
DSC	SSB radiotelephone		

MANUAL: For selection of frequency at radiotelephone when there is "remote control error."

DSC	SSB radiotelephone	NBDP-FEC
2187.5 kHz	2182.0 kHz	2174.5 kHz
4207.5 kHz	4125.0 kHz	4177.5 kHz
6312.0 kHz	6215.0 kHz	6268.0 kHz
8414.5 kHz	8291.0 kHz	8376.5 kHz
12577.0 kHz	12290.0 kHz	12520.0 kHz
16804.5 kHz	16420.0 kHz	16695.0 kHz

11. Select appropriate DSC frequency and press the [ENT] key. The display now looks something like the one below.

*** Send message ***			
CALL TYPE :	RELAY SEL		
COAST ID :	001234567		
ID IN DIST : NO	INFO		
NATURE :	SINKING		
POS :	12°34N 123°45		
COM. TYPE :	TELEPHONE		
DSC FREQ :	2187.5 KHZ		
G	O TO ALL VIEW		

12. Press the [CALL] key to send the call.

Distress relay sel
call in progress!
TO COAST : 001234567 SHIP IN DIST : NO INFO POS : 12°34N 123°45 AT 12:34 TELEPHONE 2182.0 KHZ
DSC FREQ : 2187.5 KHZ
TIME TO GO : 8S

13. The equipment then waits for acknowledgement of the distress relay, showing the following message. If the distress relay is not acknowledged within five minutes the message "No response. Try relay again." appears. If this occurs send the relay again.

Wait for distress relay acknowledge.			
FROM COAST: 001234567 SHIP IN DIST: NO INFO POS: 12°34N 123°45 AT 12:34 TELEPHONE: 2182.0 KHZ			
DSC FREQ : 2187.5 KHZ			
TIME TO GO: 4M59S			

14. The audio alarm sounds and the display looks something like the one below when the distress relay acknowledge call is received.

Distress relay ack call received.
FROM COAST : 001234567 SHIP IN DIST : NO INFO NATURE : SINKING POS : 12°34N 123°45 AT 12:34
TELEPHONE 2187.5 KHZ
STOP ALARM

15. Press the [CANCEL] key to silence the alarm. The following display appears.

* Received message *			
JUL-23-1999-23:59 ECC:OK			
DISTRESS RELAY ACK			
FROM COAST : 001234567			
SHIP IN DIST : NO INFO			
NATURE : SINKING			
POS : 12°34N 123°45 AT 12:34			
TELEPHONE 2187.5 KHZ			
GO TO ALL VIEW			

3.3.2 Sending distress relay to all ships

This procedure sends the distress relay to all ships

1. Press the [CALL] key .



- 2. Select RELAY ALL and press the [ENT] key.
- 3. Press the [ENT] key to open the ID IN DIST menu.

*** Send message ***			
CALL TYPE: RELAY ALL			
ID IN DIST			
NATURE: UN			
COM. TYPE	: TELEPHONE		
DSC FREQ.	: 2187.5 KH2	Ζ	
	GO TO ALL VIEW		

- 4. Key in ID of ship in distress (if known) and press the [ENT] key. (If you do not know the ID enter leave the ID menu as it is.
- 5. Press the [ENT] key to open the NATURE menu.



- 6. Select nature of distress (if known) and press the [ENT] key. (If you do no the nature of distress, select UNDESIGNATED.)
- 7. Press the [ENT] key to open the POS. menu, where you enter the position of the ship in distress and time, manually or automatically.



- 8. Enter position following 1), 2) or 3) below.
 - 1) For automatic input, press the [ENT] key twice.
 - **2)** For manual input, press the [ENT] key to open the INPUT TYPE menu, select MANUAL and press the [ENT] key. Enter latitude, longitude of ship in distress and time as follows:
 - a) Press to select LAT and press the [ENT] key. Enter latitude and press the [ENT] key.
 - b) Press to select LONG and press the [ENT] key. Enter longitude and press the [ENT] key.
 - c) Press ▼ to select TIME and press the [ENT] key. Enter UTC time and press the [ENT] key.

Note: If you cannot confirm time, enter 88:88 to input NO INFO as the time.

- **3) If you cannot confirm ship in distress position,** press the [ENT] key to open the INPUT TYPE menu, select NO INFO and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. TYPE menu.

*** Send message ***				
CALL TYPE: RELAY ALL ID IN DIST: 123456789 NATURE : TELEPHONE POS: 34°45N NBDP-FEC				
COM. TYPE				
DSC FREQ	:	2187.5 KHZ		
	GC	TO ALL VIEW	,	

10. Select TELEPHONE and press the [ENT] key.

11. Press the [ENT] key to open the DSC FREQ menu.

*** Send message ***					
CALL TYPE		2187.5			
ID IN DIST:		4207.5			
NATURE:		6312.0			
POS: 34°45N	:	8414.5			
COM. TYPE	: 1	12577.0			
DSC FREQ	:	MANUAL	ΗZ		
GO TO ALL VIEW					

MANUAL: For selection of frequency at radiotelephone when there is "remote control error."

12. Select appropriate frequency and press the [ENT] key. The display now looks something like the one below.

*** Send message ***			
CALL TYPE:	RELAY ALL		
ID IN DIST:	123456789		
NATURE: UN	NDESIGNATED		
POS: 34°50N	l 135°45E AT 09:30		
COM TYPE	: TELEPHONE		
DSC FREQ	: 2187.5 KHZ		
	GO TO ALL VIEW		

13. Press the [CALL] key to send the distress relay call (transmission time: about 40 sec.). The display shows the message "Distress relay all call in progress!".

Note: If a coast station acknowledges the distress alert call before the timer counts to zero, press the [CANCEL] key to cancel your call.

Distress relay call in progres	all s!	
SHIP IN DIST: 123456789 POS: 34°50N 135°45E AT 09:30		
TELEPHONE	2182.0 KHZ	
DSC FREQ :	2187.5 KHZ	
TIME TO GO:	29S	

14. After the call is sent the DSC standby screen automatically appears.

3.4 Receiving Distress Relay All Ships from Ship

When you receive a distress relay continue monitoring distress and safety frequencies over the SSB radiotelephone.

1. The audio alarm sounds and the display looks like the one below when a distress relay all ships call is received.



2. Press the [CANCEL] key to silence the alarm, and the display changes as below.

* Received message *			
JUL-23-1999-23:59	ECC: OK		
DISTRESS RELA	AY ALL		
FROM SHIP:	234567890		
SHIP IN DIST:	123456789		
NATURE: UNDESIGNATED			
POS: 12 34N 123 45E AT 12:34			
TELEPHONE	NO INFO		
GO TO ALL VIEW			

3. Watch distress/safety frequency.

3.5 Receiving Distress Relay from Coast Station

When you receive a distress relay continue monitoring distress and safety frequencies over the SSB radiotelephone.

1. The audio alarm sounds and the display looks like the one in the left-hand figure below when a distress relay is received from a coast station. Press the [CANCEL] key to silence the alarm, and the display changes as in the right-hand figure below.



This page is intentionally left blank.

This chapter provides the information necessary for general calling.

4.1 All Ships Call

When an urgent but not life endangering situation arises on your ship, for example, engine trouble, send an all ships call to request assistance.

After sending the message, you can communicate by voice over the radiotelephone. Do the following before beginning actual communications:

URGENCY priority: Say PAN three times followed by your call sign.

SAFETY priority: Say SECURITE three times followed by your call sign.



4.1.1 Sending all ships call

1. At the DSC standby screen, press the [CALL] key followed by the [ENT] key to display the CALL TYPE menu.

*** Send	INDIVIDUAL	**	If this part of the appears, use	e menu to scroll
CALL TYPE	PSTN CALL		the menu.	
STATION ID	ALL SHIPS			
PRIORITY	GROUP CALL		POLLING	
COM. TYPE	AREA CALL			
COM. FREQ	POSITION			
DSC FREQ	v		RELAY ALL	
			RELAY SEL	

2. Use ▲ or to select ALL SHIPS and press the [ENT] key.

3. Press the [ENT] key to display the PRIORITY menu.

*** Send message ***			
CALL TYPE:			
COM. TYPE			
	DISTRESS		
DSC FREQ	GO TO ALL VIEW		

- 4. Select SAFETY, URGENCY or DISTRESS as appropriate and press the [ENT] key.
- 5. Press the [ENT] key to open the COM. TYPE menu.

*** Send message ***			
CALL TYPE : PRIORITY :	ALL SHIPS		
COM. TYPE	TELEPHONE		
	NBDP-FEC		
DSC FREQ	: 2187.5 KHZ		
	GO TO ALL VIEW		

- 6. Select communication type desired and press the [ENT] key.
- 7. Press the [ENT] key to open the DSC FREQ menu.

*** Send	2187.5	***
CALL TYPE PRIORITY COM TYPE	4207.5 6312.0 8414.5 12577.0 16804.5	E
DSC FREQ	MANUAL	KHZ
GO TO ALL VIEW		

MANUAL: For manual selection of frequency at radiotelephone when there is "remote control error."

- 8. Select frequency and press the [ENT] key.
- 9. Press the [CALL] key to send the call (transmission time: about 7 sec.). The display shows "All ships call in progress!" while the call is being sent.

All ships call in progress!	
SAFETY	
TELEPHONE	2182.0 KHZ
DSC FREQ :	2187.5 KHZ
TIME TO GO:	5S

10. The DSC standby screen automatically appears after the call is sent (timer counts down to zero). The equipment is set up for telephone (or NBDP) and safety or urgency priority, using DSC safety/urgency pair frequencies.

4.1.2 Receiving all ships call

1. When an all ships call is received the audio alarm sounds and the display looks something like the one shown below.



2. Press the [CANCEL] key to silence the alarm. The display shows partial contents of the all ships call as below.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
ALL SHIPS CALL		
FROM SHIP:	123456789	
SAFETY		
TELEPHONE	2182.0 KHZ	
GO TO ALL VIEW		

3. Press the [CANCEL] key again to return to the DSC standby screen. Watch for communications about all ships call on the DSC-60 or SSB radiotelephone.

4.2 Individual Call

The individual call is for sending a message to a specific station. After sending an individual message, called ACK RQ transmission, wait to receive the acknowledge back (ACK BQ) signal from the receiving station.



4.2.1 Sending individual call

1. At the DSC standby screen, press the [CALL] key followed by the [ENT] key to open the CALL TYPE menu.



DISTRESS

- 2. Use ▲ or to select INDIVIDUAL and press the [ENT] key.
- 3. Press the [ENT] key to open the STATION ID menu.

*** Sen	d message ***	
CALL TYPE		l If you
STATION ID		you c
PRIORITY	. KOUTINE	
COM. TYPE	: TELEPHONE	1. Pre
COM. FREQ	: NO INFO	ab
DSC FREQ	: 2M-INTL	\neg
	GO TO ALL VIEW	

to input station ID automatically

have registered some station IDs (see page 6-1), an insert them into your message as follows:

ess the [FILE] key after completing step 2 in the ove procedure. The following display appears.

Select ID file	Note: You car
COAST STATION	Select ID file I
SHIP STATION	the [8/PRINT]

- n print the ist by pressing key.
- 2. Select COAST STATION or SHIP STATION and press the [ENT] key.
- 3. Select file which contains ID you want to use (press ▶ to show ID number).
- 4. Press the [ENT] key to insert ID number in message.

- 4. Key in ID of station where to send the message and then press the [ENT] key.
- 5. Press the [ENT] key to open the PRIORITY menu.

*** Send message ***			
CALL TYPE			
STATION ID	ROUTINE		
PRIORITY	BUSINESS		
COM. TYPE	SAFETY		
COM. FREC	URGENCY		
DSC FREQ	: 2M-INTL		
	GO TO ALL VIEW		

- 6. Select appropriate priority (normally ROUTINE) and press the [ENT] key.
- 7. Press the [ENT] key to open the COM. TYPE menu.



- 8. Select communications type desired and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ menu.



* POSITION is displayed if a coast station is specified at step 3.

To select a user channel

If you have previously registered user channels (see page 7-10), you can insert one into your message as follows:

1. Press the [FILE] key after completing step 8 in the above procedure. The following display appears.

User channel file
00201. TX: 2301.0 RX: 2701.0
00202. TX: 2302.0 RX: 2702.0
00301. TX: 3301.0 RX: 3701.0
00302. TX: 3302.0 TX: 3702.0
▼UP ▲DOWN

Note: You can print the User channel file list by pressing the [8/PRINT] key.

- 2. Select file and press the [ENT] key to insert channel no. in message.
- 10. Select item desired and press the [ENT] key. For FREQUENCY and CHANNEL see "How to Set Working Frequency" on the next page. NO INFO and POSITION lets the receiving station set the working frequency. Select NO INFO or POSITION to send message to a coast station. Select FREQUENCY or CHANNEL to send message to ship station.

How to set working frequency

When you send a call set the working frequency as below to communicate with the receiver of the message. The working frequency can be entered by Tx and Rx and frequencies as below or channel no. as in "Channel" on the next page.

Routine or ship's business priority

For FREQUENCY or CHANNEL follow one of the sections below.

Frequency

a) Select FREQUENCY and press the [ENT] key.

TX:	0.0 KHZ
RX:	0.0 KHZ



Note: Working TX and RX frequencies in the message can be selected to 0.0 kHz so that no information about frequencies is sent out.

c) Enter Rx frequency and press the [ENT] key. The Tx frequency entered appears in the COM. FREQ field.

*** Send message ***		
CALL TYPE:	INDIVIDUAL	
STATION ID:	123456789	
PRIORITY	: ROUTINE	
COM. TYPE	: TELEPHONE	
COM. FREQ	TX:12329.0 KHZ	
DSC FREQ	: 12M-INTL	
	GO TO ALL VIEW	

Channel

- a) Select CHANNEL and press the [ENT] key.
- b) Key in channel no. in four or five digits and press the [ENT] key. For example, enter CH 1201.
 Note that to enter user channel registered at Setup-user ch menu (page 7-11), press the [FILE] key at the COM. FREQ field and select a desired channel from the user channel file.



c) The channel entered appears in the COM. FREQ field.

*** Send message ***		
CALL TYPE:	INDIVIDUAL	
STATION ID:	123456789	
PRIORITY	: ROUTINE	
COM. TYPE	: TELEPHONE	
COM. FREQ	: CH 1234	
DSC FREQ	: 12M-INTL	
	GO TO ALL VIEW	

Safety or urgency priority

For safety or urgency priority the communication frequency cannot be selected; it is automatically set to the pair frequency as set for the DSC frequency.

11. Press the [ENT] key to open the DSC FREQ menu. (The display below appears when routine or business priority is selected.)



Use ▼ to scroll menu.

OTHER: Special, private channels. **MANUAL:** For selection of frequency at radiotelephone when there is "remote control error."

12. Select DSC frequency following the section below.

How to set DSC frequency

Routine or ship's business priority

a) Select DSC FREQ and press the [ENT] key.



b) Select appropriate DSC band and press the [ENT] key. One of the menus shown on the next page appears depending on the band selected here.

*** Send message *** CALL TYPE 2 MHz INTL : T12577.5/R12657.0 LOCAL1 : T12578.0/R12657.5 LOCAL2 : T12578.5/R12658.0	Use to scroll menu if user channels are registered. USER CH1 :T12345.0/R12345.0 USER CH2 :T12345.5/R12345.5 USER CH3 :T12346.0/R12346.0 USER CH4 :T12346.5/R12346.5	LOCAL = Local channel 18MHz menu INTL :T18898.5/R19703.5 LOCAL1 :T18899.0/R19704.0 LOCAL2 :T18899.5/R19704.5
2MHz menu INTL :T 2189.5/R 2177.0	8MHz menu INTL :T 8415.0/R 8436.5 LOCAL : T 8415.5/R8437.0 LOCAL :T 8416.0/R8437.5	22MHz menu INTL :T22374.5/R22444.0 LOCAL1 :T22375.0/R22444.5 LOCAL2 :T22375.5/R22445.0
4MHz menu INTL :T 4208.0/R 4219.5 LOCAL1 :T 4208.5/R 4220.0 LOCAL2 :T 4209.0/R 4220.5	12MHz menu INTL :T12577.5/R12657.0 LOCAL1 :T12578.0/R12657.5 LOCAL2 :T12578.5/R12658.0	25MHz menu INTL :T25208.5/R26121.0 LOCAL1 :T25209.0/R26121.5 LOCAL2 :T25209.5/R26122.0
6MHz menu INTL :T 6312.5/R 6331.0 LOCAL1 :T 6313.0/R 6331.5 LOCAL2 :T 6313.5/R 6332.0	16MHz menu INTL :T16805.0/R16903.0 LOCAL1 :T16805.5/R16903.5 LOCAL2 :T16806.0/R16904.0	Other menu INTL :T 458.5/R 458.5

*** Send message ***		
CALL TYPE:	INDIVIDUAL	
STATION ID:	123456789	
PRIORITY	: ROUTINE	
COM. TYPE	: TELEPHONE	
COM. FREQ	: NO INFO	
DSC FREQ	: 2M-INTL	
	GO TO ALL VIEW	

Safety or urgency priority

For safety or urgency priority the field COM. FREQ is automatically set to the same pair frequency as the DSC frequency.

a) Select DSC FREQ and press the [ENT] key.

*** Send message ***		
CALL TYPE: STATION ID: PRIORITY COM. TYPE COM. FREQ	2187.5 4207.5 6312.0 8414.5 12577.0 16804.5 MANI JAI	E
GO TO ALL VIEW		

- b) Select appropriate frequency with or and press the [ENT] key.
- 13. Press the [CALL] key to send the message (transmission time: about 7 sec.). The display shows the message "Individual request call in progress!" while the message is being sent.

Individual request call in progress!		
TO SHIP:	123456789	
ROUTINE		
TELEPHONE	2189.5 KHZ	
DSC FREQ :	2187.5 KHZ	
TIME TO GO: 7S		

Note: When the channel is in use, "CH BUSY" appeares at the lower left-hand side of the screen. Press [CALL] key for forced transmission.

14. After the message is sent, the equipment waits for acknowledgement of the message, showing the display below.

Waiting for acknowledge	ement.
FROM SHIP:	123456789
ROUTINE	
TELEPHONE	2189.5 KHZ
DSC FREQ :	2187.5 KHZ
TIME TO GO:	4M30S

15. The timer starts counting down the maximum time to wait for acknowledgement, 3.5-4.5 minutes, randomly set. One of the following three messages appears. ("No response! Try calling again." appears after the timer counts down to zero. It means the station called did not respond.)



16. Do one of the following depending on the message shown in step 15.

Able acknowledge call received

The audio alarm sounds; press the [CANCEL] key to silence it. The display changes as below. Press the [CANCEL] key to return to the DSC standby screen. If you are using a FURUNO SSB radiotelephone the working frequency is automatically set; you may start communications. For other makes of radiotelephone set communication frequency and class of emission.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
ABLE ACKNOWLEDGE		
FROM SHIP:	123456789	
ROUTINE		
TELEPHONE	NO INFO	
GO TO ALL VIEW		

Unable acknowledge call received

The alarm sounds; press the [CANCEL] key to silence the alarm, and the display looks something like the one below. Send the call again later. If the coast station sends the message "QUEUE INDICATION," wait until your turn arrives.

* Received message *		
JUL-23-1999-23:5	9 ECC: OK	
NO REASON GIVEN		
FROM SHIP	123456789	
ROUTINE	120400109	
GO TO ALL VIEW		

Reason for unable to acknowledge: NO REASON GIVEN CONGESTION AT SWITCHING CENTRE* BUSY QUEUE INDICATION* STATION BARRED* NO OPERATOR AVAILABLE* OPERATOR TEMPORARILY UNAVAILABLE* EQUIPMENT DISABLED MODE NOT USABLE CHANNEL NOT USABLE

* Coast station use

No response! Try calling again?

Re-send call: Press the [ENT] key (the display shown in step 12 appears) followed by the [CALL] key

Cancel call: Press the [CANCEL] key to return to the DSC standby screen.

4.2.2 Receiving individual call

Sending automatic acknowledge (ACK BQ) with comply type "ABLE"

When own ship receives an individual call you may or may not be able to receive the call depending on the comply type setting (on the Auto Ack menu) as below. The relationship between comply type and automatic/manual acknowledge is as below.

Comply type, automatic acknowledge	ABLE	UNABLE
AUTO ACK	Can send acknowledge automatically	Can send UNABLE automatically.
MANUAL ACK	Can send acknowledge manually	Can send UNABLE manually.

Note: The handset must be on hook to enable automatic acknowledge.

1. When an individual call is received and the automatic acknowledge feature is active and comply type is "ABLE", the display shown below appears, indicating the auto acknowledge call (ACK BQ) call is being sent.

Able acknowledge call in progress!	
TO SHIP:	123456789
ROUTINE	
TELEPHONE	CH 201
DSC FREQ :	2177.0 KHZ
TIME TO GO:	6S

2. It takes about 7 sec. to transmit the call, after which the audio alarm sounds and the following message appears.

Able acknow call transmitt	ledge ed.
TO SHIP:	123456789
ROUTINE	
TELEPHONE	CH 201
	STOP ALARM

3. Press the [CANCEL] key to silence the alarm and the following display appears.

* Xmitted message *		
JUL-23-1999-23:07	1	
ABLE ACKNOWLEDGE		
TO SHIP:	123456789	
ROUTINE		
TELEPHONE	CH 201	
RE-SEND 4	> ALL VIEW	

4. You can now communicate with party over frequency specified.

5. If you want to re-send the message press < to select RE-SEND and press the [ENT] key.

*** Send message ***		
CALL TYPE	: INDIVIDUAL	
SHIP ID	: 123456789	
PRIORITY	: ROUTINE	
COM. TYPE	: TELEPHONE	
COM. FREQ	: NO INFO	
DSC FREQ	: 2M-INTL	
	GO TO ALL VIEW	

6. Press the [CALL] key to re-send the call.

Sending automatic acknowledge (ACK BQ) with comply type "UNABLE"

1. When an individual call is received and the automatic acknowledge feature and comply type is "UNABLE," the display shown below appears, indicating the auto acknowledge call with UNABLE (ACK BQ) call is being sent.

Unable acknowledge call in progress!	
BUSY	
TO SHIP : 121234567 ROUTINE	
DSC FREQ : 12577.5 KHZ	
TIME TO GO : 6S	

2. It takes about 7 sec. to transmit the call, after which the audio alarm sounds and the following message appears.



3. Press the [CANCEL] key to silence the alarm and the following display appears.

* Xmitted message *	
JUL-23-1999-23:01	
UNABLE ACKNOWLEDGE	
BUSY	
5001	
TO SHIP : 121234567	
ROUTINE	
RE-SEND A NUL VIEW	
ALL VIEW	

4. If you want to send a proposal, press 4 to select RE-SEND and press the [ENT] key.

*** Send message ***	
CALL TYPE	: INDIVIDUAL
STATION ID	: 001234567
PRIORITY	: ROUTINE
COM. TYPE	: TELEPHONE
COM. FREQ	: NO INFO
DSC FREQ	: 12M-INTL
	GO TO ALL VIEW

5. Prepare individual message and press the [CALL] key to send. If the receiving station accepts your proposal, you can begin communications.

Manually acknowledging individual call with "ABLE"

1. When an individual call is received, the alarm sounds and the display looks like the one below.

Individual request call received.	
FROM COAST:	001234567
TELEPHONE	CH 12034
STOP ALARM	

2. Press the [CANCEL] key to silence the alarm, and the display changes as shown below.

* Received message *		
JUL-23-1999-23:00:	00 ECC: OK	
INDIVIDUAL REQUEST		
FROM COAST:	001234567	
ROUTINE		
TELEPHONE	CH 12034	
ANSWER 4	ALL VIEW	

3. Press • to select "ANSWER" and then press the [ENT] key.

*** Send message ***		
CALL TYPE : ABLE ACK <u>NOW! EDGE</u> MENT		
TO COAST	ABLE	7
COM. TYPE	UNABLE	DNE
COM. FREQ	: NO INFO	5
DSC FREQ	: 12M-IN	ΓL
	GO TO ALL	VIEW

4. Select ABLE and press the [ENT] key. The display changes as below. (IF ABLE is sent, working frequency is automatically set specified by other party.)

*** Send message ***		
CALL TYPE:	ABLE	
ACKN	OWLEDGEMENT	
TO COAST:	121234567	
COM. TYPE:	TELEPHONE	
COM. FREQ:	CH12034	
DSC FREQ:	12577.5 KHZ	
	GO TO ALL VIEW	

5. Press the [CALL] key to send the call, and the display changes as below.

Able acknowledge call in progress!	
TO COAST	: 121234567
ROUTINE	
TELEPHONE	CH 12034
DSC FREQ :	12577.5 KHZ
TIME TO GO:	7S

6. After the call is sent (transmission time: 7 sec.), you can begin voice communications as soon as the message is completely transmitted.)

Manually acknowledging individual call with "UNABLE"

1. When an individual call is received the alarm sounds and the display shows the message "Individual request call received."

Individual rec	quest	
FROM SHIP:	121234567	
TELEPHONE	CH 12034	
STOP ALARM		

2. Press the [CANCEL] key to silence the alarm, and the display changes as below.

* Received	I message *
JUL-23-1999-23:0	0:00 ECC: OK
INDIVIDUAL RE	QUEST
FROM SHIP:	121234567
ROUTINE	
TELEPHONE	CH 12034
ANSWER 4	ALL VIEW

3. Press • to select ANSWER and press the [ENT] key.

4. Press the [ENT] key to open the CALL TYPE menu.



- 5. Select UNABLE and press the [ENT] key.
- 6. Press the [ENT] key. The display then prompts you for the reason you are unable to acknowledge.



- 7. Select suitable reason and press the [ENT] key.
- 8. Press the [ENT] key to open the DSC FREQ menu. Select appropriate frequency and press the [ENT] key. The display changes as below.

*** Sen	d message ***
CALL TYPE	: UNABLE
ACKN	OWLEDGEMENT
REASON	: CHANNEL
	NOT USABLE
TO SHIP	: 121234567
DSC FREQ	: 12577.5 KHZ
	GO TO ALL VIEW

9. Press the [CALL] key to send the call. The display shows "Unable acknowledge call in progress!" while the call is being sent.

Unable acknow call in progres	wledge s!
CHANNEL NOT U	SABLE
TO SHIP: ROUTINE	121234567
DSC FREQ :	12577.5 KHZ
TIME TO GO:	6S

10. The timer counts down the time remaining until the message is sent (transmission time: about 7 sec.). The DSC standby screen automatically appears upon completion of transmission.

4.3 Group Call

A group call is for calling a specific group by entering its group ID.

4.3.1 Sending a group call

1. Press the [CALL] key at the DSC standby screen, and press the [ENT] key to open the CALL TYPE menu.

CALL TYPEINDIVIDUALGROUP IDPSTN CALLPRIORITYALL SHIPS
GROUP ID TEST CALL PRIORITY ALL SHIPS
PRIORITY ALL SHIPS
COM. TYPE GROUP CALL
COM. FREQ AREA CALL
DSC FREQ

If this part of the menu appears use \checkmark to scroll the menu.



- 3. Press the [ENT] key to open the GROUP ID menu.

*** Send	I message ***
CALL TYPE	: GROUP CALL
GROUP ID	00000000
PRIORITY	ROUTINE
COM. TYPE	: TELEPHONE
COM. FREQ	: NO INFO
DSC FREQ	: 2M-INTL
	GO TO ALL VIEW

How to input group ID automatically

If you have registered some group IDs (see page 6-4), you can insert them into your message as follows:

1. Press the [FILE] key after completing step 2 in the above procedure. The following display appears.

Group ID file		Note: You can print the
004. FURUNO 500. MARINE 777. ELECTRIC	> > >	Group ID file list by pressing the [8/PRINT] key.
▲UP ▼DOWN		1

- 2. Select file which contains ID you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert ID number in message.
- 4. Key in group ID (nine digits) where to send the message and press the [ENT] key.
- 5. Press the [ENT] key to open the PRIORITY menu.

*** Send	message ***	
CALL TYPE	: GROUP CALL	
GROUP ID	ROUTINE	
PRIORITY	SAFETY	
COM. TYPE	URGENCY	
COM. FREQ	NO INFO	
DSC FREQ	: 2M-INTL	
	GO TO ALL VIEW	

6. Select priority desired and press the [ENT] key.

7. Press the [ENT] key to open the COM. TYPE menu.



- Select communication type desired and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ menu.

*** Send	message ***	
CALL TYPE	: GROUP	
GROUP ID	• 010045670	
PRIORITY	NO INFO	
COM. TYPE	FREQUENCY	
COM. FREQ	CHANNEL	
DSC FREQ		
	GO TO ALL VIEW	

To select a user channel

TELEPHONE NBDP-FEC

If you have previously registered user channels (see page 7-10), you can insert one into your message as follows:

1. Press the [FILE] key after completing step 8 in the above procedure. The following display appears.

User channel file
00201. TX: 2301.0 RX: 2701.0
00202. TX: 2302.0 RX: 2702.0
00301. TX: 3301.0 RX: 3701.0
00302. TX: 3302.0 TX: 3702.0
VIP A DOWN

Note: You can print the User channel file list by pressing the [8/PRINT] key.

- 2. Select file and press the [ENT] key to insert channel no. in message.
- 10. Select communication frequency desired and press the [ENT] key. (See page 4-6 for details.)
- 11. Press the [ENT] key to open the DSC FREQ menu.



Use ▼ to scroll menu.

OTHER: Special, private channels. **MANUAL:** For selection of frequency at radiotelephone when there is "remote control error."

12. Select DSC band and then press the [ENT] key. Select DSC frequency and press the [ENT] key. (See page 4-8 for details.)
| *** Send | message *** |
|-----------|----------------|
| CALL TYPE | : GROUP |
| GROUP ID | : 012345678 |
| PRIORITY | : ROUTINE |
| COM. TYPE | : TELEPHONE |
| COM. FREQ | : 2164.0 KHZ |
| DSC FREQ | : 2177.0 KHZ |
| | GO TO ALL VIEW |

13. Press the [CALL] key to send the group call (transmission time: about 7 sec.). The display shows "Group call in progress" while the call is being sent.

Group call in prog	res	s!
GROUP ID :		012345678
ROUTINE		
TELEPHONE		2164.0 KHZ
DSC FREQ	:	2177.0 KHZ
TIME TO GO	:	6S

14. The DSC standby screen automatically appears after the message is sent.

4.3.2 Receiving a group call

Group ID must be registered in order to receive a group call. See note on page 6-4.

1. The audio alarm sounds and the display shows "Group call received" when a group call is received.



2. Press the [CANCEL] key to silence the alarm, and the display changes as below.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
GROUP CALL		
FROM SHIP :	123456789	
ROUTINE		
TELEPHONE	2164.0 KHZ	
GO TO ALL VIEW		

3. Press the [CANCEL] key to return to the DSC standby screen. Watch on the working frequency.

4.4 Geographical Area Call

The geographical area call sends a call to all ships within a specific area you designated in your geographical area call message. In the figure below, for example, the call will be sent to all ships within 10°S and 5°E of 34°N, 135°W.



4.4.1 Sending a geographical area call

1. Press the [CALL] key at the DSC standby screen, and press the [ENT] key to open the CALL TYPE menu.

*** Send <u>message *</u> **		
CALL TYPE		
STATION ID	TEST CALL	
PRIORITY	ALL SHIPS	
COM. TYPE	GROUP CALL	
COM. FREQ		
DSC FREQ		

If this part of the menu appears use A to scroll.



- 3. Press the [ENT] key to open the AREA menu.



5. Press the [ENT] key to open the PRIORITY menu.



- 6. Select priority desired and press the [ENT] key.
- 7. Press the [ENT] key to open the COM. TYPE menu.



- 8. Select communication type desired and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ menu.

*** Send message ***		
CALL TYPE	: AREA CALL	
AREA: 12°N 123	°\\/_ <u>↓12° → 12</u> °	
PRIORITY	NO INFO	
COM. TYPE	FREQUENCY	
COM. FREQ	CHANNEL	
DSC FREQ		
	GO TO ALL VIEW	

To select a user channel

If you have previously registered user channels (see page 7-10), you can insert one into your message as follows:

1. Press the [FILE] key after completing step 8 in the above procedure. The following display appears.

User channel file	
00201. TX: 2301.0 RX: 2701.0	
00202. TX: 2302.0 RX: 2702.0	
00301. TX: 3301.0 RX: 3701.0	
00302. TX: 3302.0 TX: 3702.0	

Note: You can print the User channel file list by pressing the [8/PRINT] key.

- 2. Select file and press the [ENT] key to insert channel no. in message.
- 10. Select communication frequency desired and press the [ENT] key. (See page 4-6 for details.)

11. Press the [ENT] key to open the DSC FREQ menu.



Use ▼ to scroll menu.

OTHER: Special, private channels. **MANUAL:** For selection of frequency at radiotelephone when there is "remote control error."

12. Select DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key. (See page 4-8 for details.) Your display should now look something like one below.

*** Send	I message ***
CALL TYPE	: AREA CALL
AREA : 12°N 12	23°W ↓12° →12°
PRIORITY	: ROUTINE
COM. TYPE	: TELEPHONE
COM. FREQ	: 2164.0 KHZ
DSC FREQ	: 2177.0 KHZ
0	GO TO ALL VIEW

13. Press the [CALL] key to send the geographical area call (transmission time: about 7 sec.). The display shows "Geographical area call in progress!" while the call is being sent.

Geographical area call in progress!		
AREA: 12°N 123°W	$1 \downarrow 12^{\circ} \rightarrow 12^{\circ}$	
ROUTINE		
TELEPHONE	2164.0 KHZ	
DSC FREQ :	2177.0 KHZ	
TIME TO GO :	7S	

14. After the call is sent (timer counts down to zero), the DSC standby screen automatically appears. You can now communicate with other party.

4.4.2 Receiving a geographical area call

1. The alarm sounds and the display shows "Geographical area call received" when a geographical area call is received.

Geographical area call received.	
FROM SHIP:	123456789
TELEPHONE	12264.0 KHZ
	STOP ALARM

2. Press the [CANCEL] key to silence the alarm. The display changes as below.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
GEOGRAPHICAL AREA		
FROM SHIP :	123456789	
ROUTINE		
TELEPHONE	12264.0 KHZ	
GO TO ALL VIEW		

3. Press the [CANCEL] key at any time to return to the DSC standby screen. Watch on the working frequency specified in the geographic area call.

4.5 Neutral Craft Call

This type of call informs all ships that your ship is not a participant in armed conflict, and position and own ship ID are contained in the message. Send the call before entering an area of armed conflict.

4.5.1 Sending a neutral craft call

1. Press the [CALL] key followed by the [ENT] key to display the CALL TYPE menu.





- 3. Press the [ENT] key to open the PRIORITY menu.



- 4. Select appropriate priority and press the [ENT] key.
- 5. Press the [ENT] key to open the COM. TYPE menu.
- 6. Select communication type desired and press the [ENT] key.
- 7. Press the [ENT] key to open the DSC FREQ menu.

*** Send	2187.5	***
CALL TYPE	4207.5 6312.0 8414.5	
PRIORITY COM. TYPE	12577.0 16804.5 MANUAL	
DSC FREQ		KHZ
	GO TO ALL VIE	EW

MANUAL: For selection of frequency at radiotelephone when there is "remote control error."

8. Select appropriate frequency and press the [ENT] key.

9. The display changes as below. You are now ready to send the neutral craft call.

*** Send message ***		
CALL TYPE	: NEUTRAL	
	CRAFT	
PRIORITY	: SAFETY	
COM. TYPE	: TELEPHONE	
DSC FREQ	: 2187.5 KHZ	
	GO TO ALL VIEW	

10. Press the [CALL] key to send the neutral craft call (transmission time: approx. 7 sec.).

Neutral craft call in progres	ss!
SAFETY	
TELEPHONE	2182.0 KHZ
DSC FREQ :	2187.5 KHZ
TIME TO GO:	7S

11. After the call is sent (timer counts down to zero), the DSC standby screen automatically appears. Inform all ships (by radiotelephone) that your ship is not a participant in armed conflict.

4.5.2 Receiving a neutral craft call

1. When a neutral craft call is received the alarm sounds and the display changes as below.



2. Press the [CANCEL] key to silence the alarm. The display changes as below.

* Received message *	
JUL-23-1999-23:59	ECC: OK
NEUTRAL CRAFT	
FROM SHIP:	123456789
SAFETY	
TELEPHONE	2182.0 KHZ
GO TO ALL VIEW	

4.6 Medical Transport Call

The medical transport call informs all ships, by using the priority "urgency", that own ship carries medical supplies.

4.6.1 Sending a medical transport call

1. Press the [CALL] key followed by the [ENT] key to open the CALL TYPE menu.



- 3. Press the [ENT] key to open the COM. TYPE menu.
- 4. Select communication type desired and press the [ENT] key.
- 5. Press the [ENT] key to open the DSC FREQ menu.

*** Send message ***		
CALL TYPE	2187.5	
0/122 111 2	4207.5	
	6312.0	
PRIORITY	8414.5	
COM. TYPE	12577.0	
DSC EREO	16804.5	KH7
DOCTREG	MANUAL	
	GO TO ALL VIE	w

MANUAL: For selection of frequency at radiotelephone when there is "remote control error."

6. Select appropriate frequency and press the [ENT] key. The display changes as below.

*** Send message ***		
CALL TYPE : MEDICAL		
	TRANSPORT	
PRIORITY	: URGENCY	
COM. TYPE	: TELEPHONE	
DSC FREQ	: 2187.5 KHZ	
GO TO ALL VIEW		

7. Press the [CALL] key to send the call (transmission time: about 7 sec.). The display shows "Medical transport call in progress!" while the message is being sent.

Medical transport call in progress!	
URGENCY	
TELEPHONE	2182.0 KHZ
DSC FREQ :	2187.5 KHZ
TIME TO GO :	75

8. After the message is sent (timer counts down to zero) the DSC standby screen automatically appears. Inform all ships that your ship is transporting medical supplies.

4.6.2 Receiving a medical transport call

1. When a medical transport call is received, the alarm sounds and the display looks as below.

Medical transport call received.	
FROM SHIP:	123456789
TELEPHONE	2182.0 KHZ
S	TOP ALARM

2. Press the [CANCEL] key to silence the alarm. The display changes as below.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
MEDICAL TRANS	<u>PORT</u>	
FROM SHIP:	123456789	
URGENCY		
TELEPHONE	2182.0 KHZ	
GO TO ALL VIEW		
GOIC		

4.7 Polling Call

Polling means confirming if own station is within communicating range with other station. This function only provides affirmative or negative response; it does not provide position information. Note that simultaneous polling to more than one station is not possible.



4.7.1 Sending a polling call

1. Press the [CALL] key followed by the [ENT] key to open the CALL TYPE menu.



If the part of the menu appears, use - to scroll menu.

INDIVIDUAL PSTN CALL TEST CALL ALL SHIPS GROUP CALL AREA CALL POSITION

- 2. Use ▲ or to select POLLING and press the [ENT] key.
- 3. Press the [ENT] key to open the STATION ID menu.

*** Send message ***	
CALL TYPE STATION ID	: POLLING
PRIORITY	ROUTINE
DSC FREQ	: 2M-INTL
	GO TO ALL VIEW

4. Key in ID of station where to send call and press the [ENT] key.

5. Press the [ENT] key to open the PRIORITY menu.



- 6. Select priority desired (usually ROUTINE) and press the [ENT] key.
- 7. Press the [ENT] key to open the DSC FREQ menu.



8. Select appropriate DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key. The display changes as below.

*** Send message ***		
CALL TYPE STATION ID PRIORITY	: POLLING : 123456789 : ROUTINE	
DSC FREQ	: 2M-INTL GO TO ALL VIEW	

9. Press the [CALL] key to send the call (transmission time: about 7 sec.), and the display changes as below.

Polling request call in progress!	
TO SHIP: ROUTINE	123456789
DSC FREQ :	2177.0 KHZ
TIME TO GO:	7S

10. After the call is sent (timer counts down to zero) the following display appears.

Waiting for polling acknowledgement.	
FROM SHIP: ROUTINE	123456789
DSC FREQ :	2177.0 KHZ
TIME TO GO:	4M59S

11. The timer counts down the time remaining to wait for acknowledgment of the call. One of the following displays appears. ("No response! Try calling again?" appears when there is no response from receiving station; timer counts down to zero.)



12. Do one of the following depending on the message shown in step 11.

Polling acknowledge call received

The audio alarm sounds; press the [CANCEL] key to silence the alarm. The display changes as below. You can confirm if called party is within communicating range.

* Received message *	
JUL-23-1999-23:59	ECC: OK
POLLING ACKNOWLEDGE	
FROM SHIP:	123456789
ROUTINE	
NO INFORMATION	
GO TO	ALL VIEW

No response! Try calling again?

Re-send call: Press the [ENT] key (the display shown in step 8 appears), followed by the [CALL] key to re-send the call.

Cancel call: Press the [CANCEL] key to return to the DSC standby screen.

4.7.2 Receiving a polling call

Automatic reply

1. The display changes as follows and the audio alarm sounds when a polling request call is received and the status of the [5/ACK] key is AUTO ACK and the setting of POLLING CALL on the Auto ack menu is ON.

Polling auto ack call in progress!		
TO SHIP : ROUTINE	123456789	
DSC FREQ :	2177.0 KHZ	
TIME TO GO :	7S	

2. After the call is transmitted the following display appears and the audio alarm sounds.

Polling auto a call transmitte	ack ed.
TO SHIP : ROUTINE	123456789
	STOP ALARM

3. Press the [CANCEL] key to silence the alarm. The display changes as below.

** Xmitted message **		
JUL-23-1999-23:00:09		
POLLING ACKNOWLEDGE		
TO SHIP : 123456789		
ROUTINE		
GO TO ALL VIEW		

4. Press the [CANCEL] key to return to the DSC standby screen.

Manual reply

1. The display changes as follows and the audio alarm sounds when a polling request call is received and the status of the [5/ACK] key is MANUAL ACK.



2. Press the [CANCEL] key to silence the alarm. The display changes as below.



3. Press • to select ANSWER and press the [ENT] key. The display changes as below.

*** Send message ***		
CALL TYPE	: POLLING	
	ACKNOWLEDGE	
TO SHIP	: 987654321	
PRIORITY	: ROUTINE	
DSC FREQ	: 2M-INTL	
GO TO ALL VIEW		

4. Press the [CALL] key to send polling acknowledge call. The display changes as below.

Polling acknowledge call in progress!	
TO SHIP : ROUTINE	987654321
DSC FREQ :	2177.0 KHZ
TIME TO GO:	7S

After the call is sent the DSC standby screen appears.

4.8 Position Call

There are two types of position calls: you send your position to other stations and your ship requests position of another ship.

Sending own ship's position to other stations



Finding position of other station





4.8.1 Position call: requesting other ship's position

1. Press the [CALL] key, and press the [ENT] key to open the CALL TYPE menu.



If this part of menu appears, use to scroll menu.

- 2. Use ▲ or to select POSITION and press the [ENT] key.
- 3. Press the [ENT] key to open the STATION ID menu.

*** Send message ***		
CALL TYPE:	POSITION	
	REQUEST	
STATION ID		
PRIORITY	: ROUTINE	
DSC FREQ	:2M-INTL	
	GO TO ALL VIEW	

- 4. Key in ID of station (nine digits) of which you want their position and press the [ENT] key.
- 5. Press the [ENT] key to open the PRIORITY menu.



- 6. Select priority desired (usually ROUTINE) and press the [ENT] key.
- 7. Press the [ENT] key to open the DSC FREQ menu.



Use ▼ to scroll menu.

OTHER: Special, private channels. **MANUAL:** For selection of frequency at radiotelephone when there is "remote control error."

8. Select appropriate DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key. (See page 4-8 for details.)

9. The display now looks something like the following.

*** Send message ***		
CALL TYPE:	POSITION	
	REQUEST	
STATION ID	: 123456789	
PRIORITY	: ROUTINE	
DSC FREQ	: 2177.0 KHZ	
	GO TO ALL VIEW	

10. Press the [CALL] key to send the call (transmission time: about 7 sec.). The following display appears.

Position request call in progress!	
STATION ID : 12 ROUTINE	3456789
DSC FREQ :	2177.0 KHZ
TIME TO GO:	7S

11. After the call has been sent (the timer counts down to zero) the following display appears.

Waiting for pos acknowledgment.		
STATION ID : ROUTINE	123456789	
DSC FREQ :	2177.0 KHZ	
TIME TO GO:	4M30S	

12. One of the following messages appears. ("No response! Try calling again?" appears after the time has counted down to zero, meaning there is no response from the receiving station.)

Pos acknowledge call received.		
FROM SHIP : 123456789		
POS :	L 12°34N 123°45E AT 12:34	
STOP ALARM		

No response! Try calling again? STATION ID : 123456789 ROUTINE DSC FREQ : 2177.0 KHZ CALL AGAIN

Position acknowledge call received

No response

13. Do one of the following depending on the message displayed at step 12.

Acknowledge call received

The audio alarm sounds; press the [CANCEL] or [ENT] key to silence the alarm. The display looks as below. You can now confirm position of other ship.

* Received message *		
JUL-23-1999-23:59 ECC: OK		
POSITIC	N ACKNOW	LEDGE
FROM S	HIP :	123456789
ROUTIN	E	
POS :	12°34N 123°	45E AT 12:34
	GO TO A	LL VIEW

No response! Try calling again?

Re-send call: Press the [ENT] key (the display shown in step 9 appears) followed by the [CALL] key.

Cancel call: Press the [CANCEL] key.

4.8.2 Position call: other ship requests your position

Automatic reply

1. The display changes as below when another ship requests your position and the status of the [5/ACK] key is AUTO ACK and the setting of POSITION CALL on the Auto ack menu is ON.

Position auto ack call in progress!		
TO SHIP : ROUTINE		123456789
DSC FREQ	:	2177.0 KHZ
TIME TO GO):	7S

2. After the call is sent (transmission time: approx. 7 sec.) the audio alarm sounds and the display below appears.



3. Press the [CANCEL] key to silence the alarm, and the display changes as below.

** Xmitted message **
JUL-23-1999-23:59:09
POSITION ACKNOWLEDGE
TO SHIP : 987654321
ROUTINE
POS: 35°00N 135°00E AT 23:59
GO TO ALL VIEW

4. Press the [CANCEL] key to return to the DSC standby screen.

Manual reply

1. When a position request call is received and the status of the [5/ACK] key is MANUAL ACK the audio alarm sounds and the display changes as below.



2. Press the [CANCEL] key to silence the alarm. The display changes as below.

* Received message *		
JUL-23-1999-23:00:01	ECC: OK	
POSITION REQUEST		
FROM SHIP :	123456789	
ROUTINE		
ANSWER ▲ ▲ ▲	L VIEW	

3. If you want to send your position to another ship, press ◀ to select ANSWER and press the [ENT] key. Your display should now look something like the one below.

*** Sen	d message ***
CALL TYPE:	POSITION
	ACKNOWLEDGE
POSTION	: 35°00N 135°00E
UTC TIME	: 23:01
DSC FREQ	: 2177.0 KHZ
	GO TO ALL VIEW

4. Confirm your position and then press the [CALL] to send the call (transmission time: approx. 7 sec.). The display changes as below.

Pos acknowledge call in progress!
TO SHIP : 123456789 ROUTINE POS: 35°00N 135°00E AT 23:01
DSC FREQ : 2177.0 KHZ
TIME TO GO: 7S

5. The DSC standby screen automatically appears after the call is sent.

4.9 PSTN Call

The PSTN call allows the making and receiving of telephone calls over public switched telephone networks.

4.9.1 Sending PSTN call, receiving acknowledge back (ACK BQ)

1. Press the [CALL] key followed by the [ENT] key to open the CALL TYPE menu.



- 2. Select PSTN CALL and press the [ENT] key.
- 3. Press the [ENT] key to open the COAST ID menu.



How to input coast ID automatically

If you have registered some coast IDs (Chapter 6), you can insert them into your message as follows:

1. Press the [FILE] key after completing step 2 in the above procedure. The following display appears.

PSTN ID file		1
300. FURUNO	•	F
500. MARINE	•	t
777. ELECTRIC	•	
▲UP ▼DOWN		

Note: You can print the PSTN ID file list by pressing he [8/PRINT] key.

- 3. Press the [ENT] key to insert ID number in message.
- 4. Key in ID of coast station (nine digits) to where to send the call and press the [ENT] key.

5. Press the [ENT] key to open the TEL NO. menu.



How to input telephone no. automatically

If you have registered some coast IDs (Chapter 6), you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.

Telephone no. f	ile	Note: You can print the
300. FURUNO 500. MARINE	•	Telephone no. file list by pressing the [8/PRINT] key.
777. ELECTRIC	•	
▲UP ▼DOWN		

- Select file which contains no. you want to use (press ► to show ID number).
- 3. Press the [ENT] key to insert no. in message.
- 6. Enter telephone no. (16 digits max.) and press the [ENT] key.
- 7. Press the [ENT] key to open the DSC FREQ menu.





8. Select DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key. The display changes as below.



9. Press the [CALL] key to send the PSTN call (transmission time: about 7 sec.). The display shows the following message.



10. One of the following three displays appears. ("No response. Try calling again." appears if there is no response from the receiving station - the timer counts down to zero.)

Waiting for acknowledgement.	Unable acknowledge call received.	No response! Try calling again?
FROM COAST : 001234567 TEL NO. : 1234567890123456	BUSY FROM COAST: 001234567	FROM COAST : 001234567 TEL NO. : 1234567890123456
DSC FREQ 12577.5 KHZ TIME TO GO: 25S	TEL NO. : 1234567890123456 STOP ALARM	DSC FREQ : 12577.5 KHZ RE-SEND

11. Do one of the following depending on the message shown at step 10.

Waiting for acknowledgement

1) If the PSTN call is accepted, the PSTN connection call is sent (transmission time: about 7 sec.), showing the display below.

PSTN connection call in progress!	
TO COAST : 001234567	
TEL NO. : 1234567890123456	
TELEPHONE CH 12001	
DSC FREQ : 12230.0 KHZ	
TIME TO GO: 7S	

2) After the call is sent (timer counts down to zero) one of the following message appears.

Waiting for
acknowledgement.
FROM COAST: 001234567
TEL NO. : 1234567890123456
TELEPHONE CH 12001
DSC FREQ : 12230.0 KHZ
TIME TO GO: 25S

PSTN cor call in pro	nnection gress!	
TO COAST : TEL NO. : TELEPHONE DSC FREQ :	001234567 1234567890123456 CH 16001 16360.0 KHZ	New channel
TIME TO GO:	8S	J

Request for new Tx assignment

Waiting for acknowledgement

3) One of the follow displays appears.

PSTN call connected.	Waiting for acknowledgement.	PSTN end of call in progress!
TO COAST : 001234567 TEL NO. : 1234567890123456 TELEPHONE CH 12001	FROM COAST: 001234567 TEL NO. : 1234567890123456 TELEPHONE CH 12001	TO COAST : 001234567 TEL NO. : 1234567890123456
DSC FREQ : 12230.0 KHZ	DSC FREQ 12230.0 KHZ TIME TO GO: 25S	DSC FREQ 12230.0 KHZ TIME TO GO: 8S
PSTN call connected	Waiting for acknowledgement	PSTN end of call

4) Follow the instructions below depending on the message shown in 3) above.

PSTN call connected: Your phone rings; pick up the handset and communicate with called party.

Waiting for acknowledgement: If the call is acknowledged the message "PSTN call connected." appears. Follow "PSTN call connected" above.

PSTN end of call in progress: This means channel could not be used. After the timer counts down to zero repeat this procedure to re-send the call.

Unable acknowledge

1) The audio alarm sounds; press the [CANCEL] or [ENT] key to silence the alarm. The display shown in the figure below appears.



2) Press the [CANCEL] key to return to the DSC standby screen.

No response! Try calling again?

Re-send call: Press the [ENT] key followed by the [CALL] key. **Cancel call:** Press the [CANCEL] key to return to the DSC standby screen.

Sending PSTN call, receiving acknowledge back (QUEUE 4.9.2 indication), ring back

Press the [CALL] key followed by the [ENT] key to open the CALL TYPE menu. 1.



- Select PSTN CALL and press the [ENT] key. 2.
- 3. Press the [ENT] key to open the COAST ID menu.



How to input coast ID automatically

If you have registered some coast IDs (Chapter 6), you can insert them into your message as follows:

1. Press the [FILE] key after completing step 2 in the above procedure. The following display appears.

PSTN ID file	
300. FURUNO	►
500. MARINE	►
777. ELECTRIC	►
▲UP ▼DOWN	

Note: You can print the PSTN ID file list by pressing

- the [8/PRINT] key.
- 2. Select file which contains ID you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert ID number in message.
- Key in ID of coast station (nine digits) to where to send the call and press the [ENT] key. 4.
- 5. Press the [ENT] key to open the TEL NO. menu.

*** Sen	d message ***
CALL TYPE:	PSTN CALL
COAST ID	: 001234567
TEL NO.]
-	
DSC FREQ	:12M-INTL
	GO TO ALL VIEW

How to input telephone no. automatically

If you have registered some coast IDs (Chapter 6), you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.

Telephone no. file		Note: You can print the
300. FURUNO 500. MARINE 777. ELECTRIC	> > >	Telephone no. file list by pressing the [8/PRINT] key.
▲UP ▼DOWN		

- Select file which contains no. you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert no. in message.
- Enter telephone no. (16 digits max.) and press the [ENT] key. 6.

7. Press the [ENT] key to open the DSC FREQ menu.



8. Select DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key. The display changes as below.

*** Send message ***		
CALL TYPE	: PSTN CALL	
COAST ID	: 001234567	
TEL NO.	: 1234567890123456	
DSC FREQ	: 12577.5 KHZ	
	GO TO ALL VIEW	

9. Press the [CALL] key to send the PSTN call (transmission time: about 7 sec.). The display shows the following message.

PSTN request call in progress!		
TO COAST TEL NO.	: 001234567 : 1234567890123456	
DSC FREQ	: 12577.5 KHZ	
TIME TO GO): 7S	

10. After the call is sent one of the following messages appears.

Waiting for acknowledgement.		
FROM COAST : 00123456 TEL NO. : 123456789012	7 23456	
DSC FREQ : 12577.	5 KHZ	
TIME TO GO:	25S	

Unable acknowledge call received.
QUEUE INDICATION
FROM COAST : 001234567 TEL NO. : 1234567890123456
STOP ALARM

11. Do one of the following depending on the message shown at step 10.

Waiting for acknowledge

1) After the timer counts down to zero the following message appears.



2) After the connection call is sent the following message appears.



Waiting for acknowledgement

3) After the timer counts down to zero one of the following messages appears.

PSTN call connected.		PSTN connection call in progress!			PSTN end of in progress!	of call
TO COAST : 001234567 TEL NO. : 1234567890123456 TELEPHONE CH 12001		FROM COAST : 0 TEL NO. : 1234	01234567 567890123456		TO COAST : 00 TEL NO. : 12 TEL EPHONE	1234567 34567890123456 CH 12001
DSC FREQ : 12577.5 KHZ		DSC FREQ :	12577.5 KHZ		DSC FREQ :	12577.5 KHZ
	J	TIME TO GO:	25S	J	TIME TO GO:	7S
)	TIME 10 60.	200)	TIME TO GO:	75

PSTN call connected

PSTN connection call in progress

PSTN end of call

PSTN call connected: Your phone rings; pick up the handset and communication with receiving station.

PSTN connection call in progress!: This means coast station has switched DSC frequency. (If the channel cannot be used the message "PSTN end of call in progress!" appears. In this case, start this procedure again.) If the channel assigned is OK the message "Waiting for acknowledgment." appears.

PSTN end of call in progress!: The channel could not be used. Press the [CANCEL] key to return to the DSC standby screen. Repeat this procedure to send the call again.

Unable to acknowledge call received

1) The alarm sounds; press the [CANCEL] or [ENT] key to silence the alarm. The display changes as below, waiting for the ring back call.



 One of the following displays appears. (For "No response. Try calling again?", press the [ENT] key followed by the [CALL] key to re-send the call, or press the [CANCEL] key to cancel the call and return to the DSC standby screen.)

Able acknowledge call in progress!		
TO COAST : TEL NO. 12 TELEPHONE	001234567 234567890123456 CH121001	
DSC FREQ :	12577.5 KHZ	
TIME TO GO:	8S	



3) After the acknowledge able call is sent one of the displays shown below appears. For "Pick up the handset or press the CALL key!", pick up the handset or press the [CALL] key within one minute. (If the handset is not picked up or the [CALL] key is not pressed within one minute the message "PSTN call canceled. Try calling again?" appears. In this case, press the [ENT] key to re-send the call.) For "No response! Try calling again?" you may re-send the call by pressing the [ENT] key followed by the [CALL] key, or cancel the call by pressing the [CANCEL] key.

Pick up the handset or press CALL key!	
FROM COAST : 001234567	
TEL NO. : 1234567890123456	
TELEPHONE CH 12001	
DSC FREQ : 12577.5 KHZ	
TIME TO GO: 60S	

No response! Try calling again?	
FROM COAST : 001234567 TEL NO. : 1234567890123456	•
DSC FREQ : 12577.5 KHZ	
RE-SEND	

4) The message "PSTN call in progress!" appears after you press the [CALL] key. Follow from 2) above.

4.9.3 Receiving PSTN call, sending acknowledge back (ACK BQ)

1. The following display appears when a PSTN call is received.



2. The timer counts down to zero and the following display appears.



PSTN call canceled. Try calling again.	
FROM COAST : 001234567	-
TEL NO. : 1234567890123456	
TELEPHONE CH 12001	
DSC FREQ : 12577.5 KHZ	
RE-SEND	

 Pick up the handset or press the [CALL] key within one minute. (If this not done within one minute the call is canceled, displaying the message "PSTN call canceled. Try calling again.".
 Press the [ENT] key to call followed by the [CALL] key to re-send the call.)

PSTN connection call in progress!	
TO COAST : 001234567	
TEL NO. : 1234567890123456	
TELEPHONE CH 12001	
DSC FREQ : 12577.5 KHZ	
TIME TO GO: 7S	

4. When the timer counts down to zero the following message appears.



5. One of the following messages appears.

PSTN call connected.		PSTN connect	ction s!		PSTN end o in progress!	f call
TO COAST : 001234567 TEL NO. : 1234567890123456 TELEPHONE CH 12001		FROM COAST : 0 TEL NO. : 1234	01234567 567890123456		TO COAST : 00 ⁷ TEL NO. : 123 TELEPHONE	1234567 34567890123456 CH 12001
DSC FREQ : 12577.5 KHZ	1	DSC FREQ :	12577.5 KHZ		DSC FREQ :	12577.5 KHZ
	J	TIME TO GO:	25S	J	TIME TO GO:	7S
PSTN call connected		PSTN connection call in progress			PSTN	end of call

6. Do one of the following depending on the message shown at step 5.

PSTN call connected: Your phone rings; pick up the handset and communication with receiving station.

PSTN connection call in progress!: This means coast station has switched DSC frequency. (If the channel cannot be used the message "PSTN end of call in progress!" appears. In this case, start this procedure again.) If the channel assigned is OK the message Waiting for acknowledgment." appears.

PSTN end of call in progress!: The channel could not be used. Press the [CANCEL] key to return to the DSC standby screen. Repeat this procedure to send the call again.

4.9.4 PSTN call disconnection, receiving charge information (ship disconnects line)

1. After hanging up the handset or pressing the [CANCEL] key to complete your call the display shows the following message.



2. After the call is sent one of the following messages appears. (For time out the message "PSTN end of call in progress!" appears. After the timer counts down to zero "Waiting for charge information." appears.)

Waiting for charge information.]
FROM COAST : 001234567 TEL NO. : 1234567890123456	_
DSC FREQ : 12230.0 KHZ	
TIME TO GO: 20S	

PSTN end of call in progress!		
TO COAST TEL NO.	: 001234567 : 1234567890123456	-
DSC FREQ	: 12230.0 KHZ	
TIME TO GO	D: 8S	

3. When the timer counts down to zero one of the following displays appear.

Charge information call received.		
CHARGE TIME : 00H 12M 34S FROM COAST : 001234567 TEL NO. : 1234567890123456		
STOP ALARM		

No response! charge information.		
FROM COAST : 001234567		
TEL NO. : 1234567890123456		

4. For "No response! charge information.", the equipment reverts to step 2 in this procedure to await charge information. For "Charge information call received." the audio alarm sounds; press the [CANCEL] key or [ENT] key to silence the audio alarm. The display shown below appears.

* Received message *		
JUL-23-1999-23:59	ECC: OK	
CHARGE INFORI	MATION	
CHARGE TIME :	00H 12M 34S	
FROM COAST :	001234567	
TEL NO. : 123	34567890123456	
GO	TO ALL VIEW	

4.9.5 PSTN call disconnection, receiving charge information (coast station disconnects line)

1. The PSTN line is disconnected by the coast station when it finds no evidence of communications or the land subscriber hangs up. The coast station then sends charge information as below.



2. For no charge information the display looks as below.

* Received message *			
JUL-23-1999	JUL-23-1999-23:59 ECC: OK		
CHARGE IN	CHARGE INFORMATION		
CHARGE T	CHARGE TIME : NO INFO		
FROM COAST : 001234567			
TEL NO.	1234567	890123456	
	GO TO A	LL VIEW	

The log file stores routine received messages (messages other than Distress), received distress messages and transmitted messages, each in its own separate log.

5.1 Log File Description

Three memory banks are provided for storage of messages: received ordinary log, received distress log and transmitted log. Each memory bank stores 50 messages, on a first-in, first-out basis. This means that a latest message is saved as log no.1 and the log no. of all previous messages in that memory bank increments by one. When the storage capacity is exceeded the oldest message is deleted to make room for the latest. An asterisk (*) marks unread or unacknowledged Rx messages, unacknowledged Tx messages and unread distress messages. Received distress messages are automatically deleted 48 hours after being read.

5.2 Opening a Log File

5.2.1 Distress log

1. Press the [0/LOG] key to open the Log file menu.



 Select RECEIVED DISTRESS and press the [ENT] key. Use ▲ or to scroll the log as desired. To print all received distress messages, press the [8/PRINT] key.

* Rcvd distress log *			* Rcvd di	stress log *
01.JUL-23-19:58	ACKNOWLED		45.JUL-01-23:45	*RELAY ALL
02.JUL-23-19:56	DISTRESS		46.JUN-29-19:56	*RELAY ALL
03.JUL-23-13:45	*RELAY ALL		47.JUN-29-19:48	*DISTRESS
04.JUL-23-11:52	RELAY AREA		48.JUN-29-19:44	*DISTRESS
05.JUL-23-11:43	RELAY GRP		49.JUN-26-12:36	*ACKNOWLED
06.JUL-22-21:18	RELAY INDV		50.JUN-26-12:34	*DISTRESS
▼ OLD ▲NEW	► DELETE]◀──►	▼OLD ▲NEW	► DELETE
		Scroll with	 າ	



3. To view a file, select it and press the [ENT] key. To print file, display it and press the [8/PRINT] key. To return to the distress log, press the [CANCEL] key.

* Rcvd distress log *		* Received message *
45.JUL-01-23:45 *RELAY ALL 46.JUN-29-19:56 *RELAY ALL 47.JUN-29-19:48 *DISTRESS 48.JUN-29-19:44 *DISTRESS 49.JUN-26-12:36 *ACKNOWLED 50.JUN-26-12:34 *DISTRESS	Select file, press [ENT] to view.	JUN-26-1999-12:34:56 ECC: OK DISTRESS CALL SHIP IN DIST : 987654321 NATURE : UNDESIGNATED POS : 12°34N 123°45E AT 12:34 TELEPHONE 2182.0 KHZ
▼OLD ▲NEW ► DELETE		ANSWER ALL VIEW

4. To delete a file, select it, press ► to select DELETE, and press the [ENT] key. The log files are renumbered to reflect the deletion.

Note: Unread files cannot be deleted.

* Rcvd distress log *		* Rcvd distress log *
45.JUL-01-23:45 *RELAY ALL 46.JUN-29-19:56 *RELAY ALL 47.JUN-29-19:48 *DISTRESS 48.JUN-29-19:44 *DISTRESS 49.JUN-26-12:36 *ACKNOWLED 50.JUN-26-12:34 *DISTRESS ▼ OLD ▲NEW ▶ DELETE	Select file to delete, press ► to select DELETE, press [ENT] to delete.	44.JUL-01-12:34 *RELAY ALL 45.JUL-01-23:45 *RELAY ALL 46.JUN-29-19:56 *RELAY ALL 47.JUN-29-19:48 *DISTRESS 48.JUN-29-19:44 *DISTRESS 49.JUN-26-12:36 *ACKNOWLED ▼OLD ▲NEW ▶DELETE

5.2.2 Ordinary log

1. Press the [0/LOG] key to open the Log file menu.



2. Press the [ENT] key to open the received ordinary log. To print all ordinary received messages, press the [8/PRINT] key.

* Rcvd ordinary log			
01.JUL-23-23:55	*INDIVIDUAL		
02.JUL-23-23:41	PSTN CALL		
03.JUL-23-21:34	TEST CALL		
04.JUL-22-12:34	ALL SHIPS		
05.JUL-13-18:21	*GROUP CALL		
06.JUN-29-11:23	AREA CALL		
▼OLD ▲NEW	► DELETE		

- 3. Use \checkmark or \checkmark to scroll the log.
- 4. To view the contents of a file, select it and press the [ENT] key. To print a file, display it and press the [8/PRINT] key. To return to the received ordinary log, press the [CANCEL] key.



5. To delete a file, select it, press → to select DELETE, and press the [ENT] key. The log files are renumbered to reflect the deletion.

Note: Unread files cannot be deleted.



5.2.3 Transmitted log

1. Press the [LOG] key to open the Log file menu.



2. Select TRANSMITTED and press the [ENT] key. To print all transmitted messages, press the [8/PRINT] key.

** Transmitted log *			
01.JUL-23-23:55	*INDIVIDUAL		
02.JUL-23-23:41	PSTN CALL		
03.JUL-23-21:34	TEST CALL		
04.JUL-22-12:34	ALL SHIPS		
05.JUL-13-18:21	*GROUP CALL		
06.JUN-29-11:23	AREA CALL		
▼OLD ▲NEW	► DELETE		

- 3. Use \checkmark or \checkmark to scroll the log.
- 4. To view the contents of a file select it and press the [ENT] key. To print a file, display it and press the [8/PRINT] key.

** Transmitted log *			* Xmitted message *
01.JUL-23-23:55	*INDIVIDUAL	Select file, press [ENT] to view.	MAY-12-1999-03:31:45
02.JUL-23-23:41	PSTN CALL		UNABLE ACKNOWLEDGE
03.JUL-23-21:34	TEST CALL		NO REASON GIVEN
04.JUL-22-12:34	ALL SHIPS		TO SHIP: 234567890
05.JUL-13-18:21	*GROUP CALL		ROUTINE
06.JUN-29-11:23	AREA CALL		
▼OLD ▲NEW	► DELETE	J	RE-SEND ◀ ► ALL VIEW

5. To delete a file, select it, press → to select DELETE, and press the [ENT] key. The log files are renumbered to reflect the deletion.

Note: Unread files cannot be deleted.

- 6. To re-send a file do the following:
 - a) Do steps 1-4 above to select file to re-send.
 - b) Press 4 to select RE-SEND.
 - c) Press the [ENT] key.
 - d) Press the [CALL] key.
6. PREPARING SEND MESSAGES

In Chapter 4 you learned how to prepare and send individual, group, geographical area and PSTN calls. In this chapter you will learn how to prepare and store them (including test calls) for future transmission. 150 such files can be stored.

6.1 Preparing Individual Call Messages

- 1. Press the [#/SETUP] key to open the Setup menu.
- 2. Select MESSAGE and press the [ENT] key.
- 3. Press the [ENT] key to open the CALL TYPE menu.



- 5. Press the [ENT] key to open the STATION ID entry window.

* Messa	age file entry
CALL TYPE	: INDIVIDUAL
STATION ID	
COM. TYPE	: TELEPHONE
COM. FREQ	: NO INFO
DSC FREQ	: 2M-INTL
▼	

How to input station ID automatically

If you have previously registered some station IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.



Note: You can print the Select ID file list by pressing the [8/PRINT] key.

- 2. Select COAST STATION or SHIP STATION and press the [ENT] key.
- 3. Select file which contains ID you want to use (press → to show ID number).
- 4. Press the [ENT] key to insert ID number in message.
- 6. Key in ID of coast station or ship station which is to receive the call and press the [ENT] key.

7. Press the [ENT] key to open the COM. TYPE window.



- 8. Select communication type desired and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ window.



POSITION appears when coast station ID is entered in the field STATION ID.

10. Choose appropriate item and press the [ENT] key. To coast station: NO INFO or POSITION.

To ship station: FREQUENCY or CHANNEL. Enter appropriate frequency or channel, referring to page 4-6.

11. Press the [ENT] key to open the DSC FREQ menu.



- 12. Select appropriate DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key.
- 13. Enter file name and file number as shown on the next page.



3. Press the [ENT] key to open the file number entry window. Key in file number in three digits with the numeric keys, and press the [ENT] key. For example, press [0] [0] [1] [ENT] to enter file number 001.

* Message file entry	
FILE NAME : FURUNO	
FILE ENT	۲Y

Note: The available file number is 001-799 and 900-999. Do not use "8" as the first digit of a file number.

4. Press the [ENT] key. The display shows the name and file number entered.



If the file name or number exists the message "Duplicate name (number) ! Overwrite OK?" appears. Press [ENT] to write over the name, or press the [CANCEL] key to escape.

5. Press the [ENT] key to continue.

6.2 Preparing Group Call Messages

- 1. Press the [#/SETUP] key to open the Setup menu.
- 2. Select MESSAGE and press the [ENT] key.
- 3. Press the [ENT] key to open the CALL TYPE menu.

* Message file entry		
CALL TYPE STATION ID COM. TYPE COM. FREQ DSC_FREQ	INDIVIDUAL PSTN CALL GROUP CALL AREA CALL TEST CALL	
V		

- 5. Press the [ENT] key to open the GROUP ID entry window.

* Message file entry		
CALL TYPE:	GROUP CALL	
GROUP ID	00000000	
COM. TYPE		
COM. FREQ	: NO INFO	
DSC FREQ	: 2M-INTL	
▼		

How to input group ID automatically

If you have previously registered some group IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.



Note: You can print the Group ID file list by pressing the [8/PRINT] key.

- 3. Press the [ENT] key to insert ID number in message.
- 6. Key in ID of group which is to receive the call and press the [ENT] key.
- 7. Press the [ENT] key to open the COM. TYPE menu.

* Message file entry		
CALL TYPE:	GROUP CALL	
GROUP ID	: 012345678	
COM. TYPE	: TELEPHONE	
COM. FREQ	: NBDP-FEC	
DSC FREQ	: 2M-INTL	
▼		

- 8. Select appropriate communications type and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ menu.



- 10. Choose appropriate item and press the [ENT] key. (See page 4-6 for details for how to enter frequency and channel.)
- 11. Press the [ENT] key to open the DSC FREQ menu.



- 12. Select appropriate DSC band and press the [ENT] key. Select appropriate DSC frequency and press the [ENT] key.
- 13. Follow "How to Enter File Name and Number" on page 6-3 to enter file name and number.

Note: Your ship's group ID will be as registered as entered in step 6 of this procedure.

6.3 Preparing Geographical Area Call Messages

- 1. Press the [#/SETUP] key to open the Setup menu.
- 2. Select MESSAGE and press the [ENT] key.
- 3. Press the [ENT] key to open the CALL TYPE menu.

* Message file entry		
CALL TYPE STATION ID COM. TYPE COM. FREQ DSC FREQ	INDIVIDUAL PSTN CALL GROUP CALL AREA CALL TEST CALL	
▼		

- 4. Use ▲ or to select AREA CALL and press the [ENT] key.
- 5. Press the [ENT] key to open the AREA entry window.

* Message file entry		
CALL TYPE AREA CALL		
AREA :°E ↓° →°		
COM. TYPE : TELEPHONE		
COM. FREQ : NO INFO		
DSC FREQ : 2M-INTL		
▼		

- 7. Press the [ENT] key to open the COM. TYPE menu.

* Message file entry			
CALL TYPE:	INDIVIDUAL		
AREA: 34°N 135			
COM. TYPE	TELEPHONE		
COM. FREQ	NBDP-FEC		
DSC FREQ	2M-INTL		
▼			

- 8. Select appropriate item and press the [ENT] key.
- 9. Press the [ENT] key to open the COM. FREQ menu.



- 9. Select appropriate item and press the [ENT] key. (See page 4-6 for how to enter channel and frequency.)
- 10. Press the [ENT] key to open the DSC FREQ menu.



- 11. Select appropriate DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key.
- 12. Follow "How to Enter File Name and Number" on page 6-3 to enter file name and number.

Preparing PSTN Call Messages 6.4

- 1. Press the [#/SETUP] key to open the Setup menu.
- 2. Select MESSAGE and press the [ENT] key.
- 3. Press the [ENT] key to open the CALL TYPE menu.

* Message file entry		
CALL TYPE STATION ID COM. TYPE COM. FREQ DSC. FREQ	INDIVIDUAL PSTN CALL GROUP CALL AREA CALL TEST CALL	
V		

- 4. Select PSTN CALL and press the [ENT] key.
- 5. Press the [ENT] key to open the COAST ID entry window.

* Message file entry		
CALL TYPE	: PSTN CALL	
COAST ID	00000000	
TEL NO. :		
TEL NO. :		
DSC FREQ	: 2M-INTL	

How to input coast ID automatically

If you have previously registered some coast IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.



PSTN ID file list by pressing the [8/PRINT] key.

- 2. Select file which contains ID you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert ID number in message.
- Key in ID of coast station (seven digits) to send the call to and press the [ENT] key. 6.
- 7. Press the [ENT] key to open the TEL. NO. entry window.



How to input telephone no. automatically

If you have previously registered some coast IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 6 in the above procedure. The following display appears.



- Note: You can print the Telephone no. file list by
- pressing the [8/PRINT] key.
- 2. Select file which contains no. you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert no. in message.
- 8. Key in telephone no. (max. 16 digits) and press the [ENT] key.
- 9. Press the [ENT] key to open the DSC FREQ menu.



- 10. Select appropriate DSC band and press the [ENT] key. Select DSC frequency and press the [ENT] key.
- 11. Follow "How to Enter File Name and Number" on page 6-3 to enter file name and number.

6.5 Preparing Test Call Messages

- 3. Press the [#/SETUP] key to open the Setup menu.
- 4. Select MESSAGE and press the [ENT] key.
- 5. Press the [ENT] key to open the CALL TYPE menu.

 Message file entry 		
CALL TYPE	INDIVIDUAL	
STATION ID	PSTN CALL	
COM. TYPE		
COM. FREQ		
DSC FREQ		
▼		

- 4. Select TEST CALL and press the [ENT] key.
- 5. Press the [ENT] key to open the COAST ID menu.

* Message file entry		
CALL TYPE COAST ID	· TEST	
PRIORITY	: SAFETY	
DSC FREQ	: 2187.5 KH2	Ζ
	GO TO ALL VIEW	

How to input coast ID automatically

If you have previously registered some coast IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 4 in the above procedure. The following display appears.

Test ID file		Note: You can print the
300. FURUNO 500. MARINE 777. ELECTRIC	> > >	Test ID file list by pressing the [8/PRINT] key.
▲UP ▼DOWN		

- Select file which contains ID you want to use (press ▶ to show ID number).
- 3. Press the [ENT] key to insert ID number in message.

6. Press the [ENT] key to open the DSC FREQ menu.

* Message file entry			
CALL TYPE COAST ID PRIORITY DSC FREQ	2187.5 4207.5 6312.0 8414.5 12577.0 16804.5 MANUAL	(HZ	

MANUAL: For selection of frequency at radiotelephone when there is "remote control error."

- 7. Select appropriate DSC frequency and press the [ENT key.
- 8. Follow "How to Enter File Name and Number" on page 6-3 to enter file name and number.

6.6 Sending Prepared Messages

1. Press the [*/FILE] key at the DSC standby screen to show the send message file list. Below is an example of the send message file list.

* Send message file *
001 - FURUNO JAPAN
002 - FURUNO USA
003 - FURUNO UK
004 - FURUNO DENMARK
005 - FURUNO NORWAY
006 - FURUNO SPAIN
007 - FURUNO FRANCE
▲UP →DOWN →DELETE

- 3. Press the [CALL] key to send the file.

Note: You can delete a file by selecting it, pressing > followed by the [ENT] key.

6.7 Printing List of Send Message Files

You can print a list of send message files as follows:

- 1. Press the [*/FILE] key to open the Send message file list.
- 2. Press the [8/PRINT] key.
- 3. Press ◀ to select YES and press the [ENT] key.

Note: Message not framed in actual printout.

7.1 Setup Menu Overview

The Setup menu, consisting of 11 menus, provides for set up of the equipment according to expected usage and user's preferences.

1. At the DSC standby screen, press the [#/SETUP] key to display the Setup menu.

**** Setup menu ****			
ALARM	SCAN FREQ		
AUTO ACK	USER CH		
ERASE	VOLUME		
MESSAGE			
POSITION	TEST		
PRINT OUT	SYSTEM		

2. Use the Cursor Pad to select a menu and press the [ENT] key. For example, select the Volume menu.

*** Volume setup ***		
KEY CLICK	: ON	
HANDSET	: 40	
ORDINARY ALARM	: 30	
DISTRESS ALARM	: 63	

3. Use the Cursor Pad to choose item and press the [ENT] key. For example, select KEY CLICK. A pop-up window showing choices appears.

ttt Volumo cotup ttt		
*** volume setup ***		
KEY CLICK		
HANDSET		
TANDSET		
ORDINARY ALARM	: 30	
DISTRESS ALARM	: 63	

- 5. Press the [CANCEL] key twice to close the menu and return to the DSC standby screen.

7.2 Alarm Menu

The Alarm menu enables/disables internal and external alarms. Note that the Distress/Urgency alarm cannot be disabled. Press the [#/SETUP] key, select ALARM and press the [ENT] key to display the Alarm menu.



7.3 Auto Ack Menu

The Auto Ack menu enables/disables automatic acknowledgement of individual, position and polling calls. Press the [#/SETUP] key, select AUTO ACK and press the [ENT] key to display the Auto Ack setup menu. See the next page for the Auto Ack menu.

Comply type, automatic acknowledge	ABLE	UNABLE
AUTO ACK	Can send acknowledge automatically	Can send UNABLE automatically
MANUAL ACK	Can send acknowledge manually	Can send UNABLE manually



7.4 Erase File Menu

The Erase file menu separately erases the entire contents of the received ordinary log, received distress log, transmitted log, send messages and user channels. Press the [#/SETUP] key, select ERASE FILE and press the [ENT] key to display the Erase file menu. Select the item to erase and press the [ENT] key.



Note: The contents of the "SEND MESSAGE" and "USER CHANNEL" are kept until turning off the power.

7.5 Message Menu

The Message menu prepares and stores messages for later transmission. Press the [#/SETUP] key, select MESSAGE and press the [ENT] key to display the Message menu. For further details see Chapter 6.

7.6 Position Menu

Position and time are entered (automatically or manually) on the Position menu. Manually enter position and time when the DSC-60 is not interfaced with EPFS or the EPFS is not working. Press the [#/SETUP] key, select POSITION and press the [ENT] key to display the Position menu. For further details see Paragraph 2.10 "Manual Input of Position and Time" on page 2-10.

7.7 Print Out Menu

The Print Out menu enables/disables automatic printing of transmitted and received messages and the results of the daily test. Press the [#/SETUP] key, select PRINT OUT and press the [ENT] key to display the Print Out menu.



7.7.1 Sample printouts

Printing can be done automatically or manually. For manual printing, press the [8/PRINT] key. Note that messages comprised of more than one page (for example, received messages) are printed out in their entirety.

* Received message at JAN-08-1999-16:10:12 *	
FORMAT : DISTRESS CALL	
SELF-IDENTITY : 987654321	
NATURE OF DISTRESS : UNDESIGNATED DISTRESS	
DISTRESS COORDINATES: NO INFORMATION	
DISTRESS TELECOMMAND: J3E TELEPHONE	
FND OF SFOUENCE : FOS	
EBBUB-CHECK : UK	
	Sample Received Message
DSC FREQUENCY TX: 2187 5 kHz	Printout (Distress)
RX: 2187.5 kHz	· · ··································
)
* Received message at JAN-08-1999-16:10:12 *)
FORMAT : INDIVIDUAL CALL	
ADDRESS : 111660000	
CATEGORY : ROUTINE	
SELF-IDENTITY : 987654321	
1st TELECOMMAND : J3E TELEPHONE	
2nd TELECOMMAND : NO INFORMATION	
WORKING FREQUENCY : NO INFORMATION	
END OF SEQUENCE : ACK. RQ	
ERROR-CHECK : OK	Sample Received Message
	Printout (Individual)
DSC FREQUENCY TX: 2177.0 kHz	
RX: 2177.0 kHz	
	,
******************** Send message **************	
****************** Send message ************************************	
****************** Send message ************************************	

*************Send messageFORMAT: INDIVIDUAL CALLADDRESS: 111660000CATEGORY: ROUTINESELF-IDENTITY: 9876543211st TELECOMMAND: J3E TELEPHONE2nd TELECOMMAND: NO INFORMATIONWORKING FREQUENCY: NO INFORMATIONEND OF SEQUENCE: ACK. RQ	Sample Send Message
***********************************	Sample Send Message
************************************	Sample Send Message Printout (Individual)
************************************	Sample Send Message Printout (Individual)
***********************************	Sample Send Message Printout (Individual)
**************************************	Sample Send Message Printout (Individual)
<pre>************************************</pre>	Sample Send Message Printout (Individual)
<pre>******************* Send message ************************************</pre>	Sample Send Message Printout (Individual)
<pre>************************************</pre>	Sample Send Message Printout (Individual) Sample Transmitted Message Printout (Individual)
<pre>************************************</pre>	Sample Send Message Printout (Individual) Sample Transmitted Message Printout (Individual)

Note: Messages are not framed in actual printouts.

7.8 Scan Freq Menu

The Scan freq menu determines which DSC routine and distress frequencies to scan. Follow the instructions below to select/deselect DSC routine and distress frequencies to scan.

7.8.1 Distress frequencies

1. Press the [#/SETUP] key, select SCAN FREQ and press the [ENT] key to display the SCAN FREQ menu.

** Scan freq setup *			
ROUTINE	DISTRESS		
F1 : 2M-INTL	2M : FIXED		
F2 : 4M-INTL	4M : ON		
F3 : 6M-INTL	6M : ON		
F4 : 8M-INTL	8M : FIXED		
F5 : 16M-INTL	12M : ON		
F6 : 25M-INTL	16M : OFF		

- 2. Press > to shift the cursor to the DISTRESS column.
- 3. Select the frequency to process and press the [ENT] key. For example, select 4 MHz.

** Scan freq setup *				
ROUTINE	DISTRESS			
F1 : 2M-INTL	2M : <u>FIXED</u>			
F2 : 2M-USR3	4M : ON			
F3 : 4M-INTL	6M : OFF			
F4 : 8M-INTL	8M :			
F5 : 16M-LCL1	12M : ON			
F6 : 25M-LCL2	16M : OFF			

- 4. Select ON or OFF as appropriate and press the [ENT] key.
- 5. Press the [CANCEL] key twice to return to the DSC standby screen.

Note: Regulations require that 2 MHz and 8 MHz be watched continuously. These frequencies cannot be turned off. Maximum three bands may be turned off.

7.8.2 Routine frequencies

1. Press the [#/SETUP] key, select SCAN FREQ and press the [ENT] key to display the Scan freq menu.

** Scan freq setup *			
ROUTINE DISTRESS			
F1 : 2M-INTL	2M : FIXED		
F2 : 4M-INTL	4M : ON		
F3 : 6M-INTL	6M : ON		
F4 : 8M-INTL	8M : FIXED		
F5 : 16M-INTL	12M : ON		
F6 : 25M-INTL	16M : OFF		

2. Select the frequency to process and press the [ENT] key. For example, select 2 MHz.

** Scan freq setup *			Use - to scroll
ROUOFF		DISTRESS	
F1 : 2 MHZ		2M : FIXED	
F2 : 4 MHZ	З	4M : ON	12 MHZ
F3 : 6 MHZ		6M : ON	16 MHZ
		8M : FIXED	22 MHZ
F5 :		12M : ON	25 MHZ
F6 :	Į	16M : OFF	OTHER

3. Press the [ENT] key, and the display looks something like the one below.



- 5. Press the [CANCEL] key twice to return to the DSC standby screen.

7.9 User CH Menu

The User ch menu allows registration of user Tx and Rx channels, where permitted by the Authorities. Follow the instructions below to register user channels.



1. Press the [#/SETUP] key, select USER CH and press the [ENT] key to display the User ch entry menu.

*** User ch entry **				
 MOD 	▲ MODE: TEL			2-01
0201.	TX:	2111.5	RX:	2111.5
0202.	TX:	2222.0	RX:	2222.0
0203.	TX:	2333.5	RX:	2333.5
0204.	TX:	2444.0	RX:	2444.0
0205.	TX:	2555.5	RX:	2555.5
▲ UP DOWN				

2. Press 4 to select MODE and press the [ENT] key.

*** User ch entry **					
	: ₁	EL	CH:	2-01	
0201.	T) N	IBDP	RX:	2111.5	
0202.	T	SC	RX:	2222.0	
0203.	тх .	2000.0	RX:	2333.5	
0204.	TX:	2444.0	RX:	2444.0	
0205.	TX:	2555.5	RX:	2555.5	
▲ UP DOWN					

- 3. Select appropriate mode and press the [ENT] key.
- 4. Press ▶ to select CH and press the [ENT] key.

	*** User ch entry **					
♦ MODE: NBDP			СН	0-00		
	0201.	TX:	2101.5	100	2101.0	┩
	0202.	TX:	2202.0	RX:	2202.0	
	0203.	TX:	2303.5	RX:	2303.5	
	0204.	TX:	2404.0	RX:	2404.0	
	0205.	TX:	2505.5	RX:	2505.5	
	▲ UP ▼ DOWN					

256 channels may be registered.

Band no. setting range is 0-29 and band channel no. range is 01-99.

For DSC, four channels can be registered per band (2, 4, 6 8, 12, 16, 18, 22, 25).

"0" band is for DSC frequencies only, and they are registered under "OTHER."

5. Key in channel no. and press the [ENT] key. For example, press [1], [2], [3], [4] and [ENT] to enter channel 1234. The channel selected is shown in black on white characters at the top of the screen.

*** User ch entry **				
			2-34	
0123	4. TX:	0.0	RX:	0.0
0124	0. TX:	12666.0	RX: 13	666.0
0124	1. TX:	12777.5	RX: 13	777.5
0124	2. TX:	12999.5	RX: 13	999.5
0125	0. TX:	12100.0	RX: 13	100.0
▲ UP	- DOW	N		



7. The display shows the information entered. Using the examples mentioned in this procedure, Tx frequency 12345.5, Rx frequency 13456.0 are registered to channel 1234.

*:	** User ch	entry **	
▲ MO	DE: NBDP	▶ CH: 12-34	
01234	TX: 12345.5	RX: 13456.0	
01240	TX: 12666.0	RX: 13666.0	
01241	TX: 12777.5	RX: 13777.5	
01242	TX: 12999.5	RX: 13999.5	
01250	TX: 12100.0	RX: 13100.0	
▲ UP ▼	DOWN		_

7.10 Volume Menu

The Volume menu enables/disables key beep (acknowledges correct key input) and adjusts the volume of the handset, ordinary alarm and distress/urgency alarm. Press the [#/SETUP] key, select VOLUME and press the [ENT] key to display the Volume menu.



Distress and Urgency alarms, emitted through external loudspeaker.

7.11 Test Menu

The Test menu provides test facilities for the service technician. This menu cannot be accessed by the operator.

*** Test function **		
TONE	AF PCB	
BK	CONT PCB	
REMOTE	PANEL PCB	
EXT ALARM	RX PCB	
EXT ALERT	TA TEST	
PROTECTION: ON		

7.12 System Menu

The System menu sets up the equipment and is for use by service technicians. This menu cannot be accessed by the operator. However the operator can view the settings by using \checkmark and \checkmark .



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8. CHECKING, MAINTENANCE



Do not open the equipment.

Hazardous voltage which can cause electrical shock exists inside the equipment. Only qualified personnel should work inside the equipment.

8.1 Daily Test

Authorities require that the equipment be checked daily for proper operation to ensure that it will function properly in the event of distress. Execute the daily test as below.

- 1. At the DSC standby screen or radiotelephone setting screen, press the [3/TEST] key to start the test.
- 2. After several seconds the test results appear followed by the audio alarm. OK denotes normal operation, and NG (No Good), error. For NG (No Good) contact your dealer for advice.

**DSC-60	daily test **	
JAN-01-2000-15:24		
MAIN CPU	:OK VER.XX*	
MODEM	:OK VER.XX*	
RCVR1	:OK	
RCVR2	:OK	
REMOTE RT	:OK FS1562	
REMOTE DP	:OK DP-6	

MAIN CPU:	ROM/RAM test executed and version no.
	displayed.
MODEM:	DSP ROM and DSC signal loop back tests
	executed and version no. displayed.
RCVR1:	Distress/safety watch received tested.
RCVR2:	Routine watch receiver (option) tested.
REMOTE RT:	CAID of MIF command sent and received. Name of
	equipment connected (if FURUNO make) and
	result appear.(System setting RP PORT must be
	set for RT or MIF otherwise nothing appears.)
REMOTE DP:	CAID of MIF command sent and received. Name of
	equipment connected (if FURUNO make) and
	result appear.(Nothing appears when system
	setting NBDP PORT is OFF.)
Alarm:	Distress alarm sounds for two seconds after
	completion of test.
* XX = Version n	umber

3. If auto printing is active the test results are printed. To manually print results, press the [8/PRINT] key. Below is a sample test results printout.

```
* DSC-60 DAILY TEST *
JAN-01-2000-15:24
MMSI: 123456789
MAIN CPU: OK VER.XX#
MODEM: OK VER.XX#
RCVR1: OK
RCVR2: OK
REMOTE RT: OK FS1562
REMOTE DP: OK DP-6
```

4. Press the [CANCEL] key to quit the test and return to the previously used screen.

8.2 Maintenance

Regular maintenance is necessary for continued performance. Following the procedures below will help keep the equipment in top operating condition.

8.2.1 Preventive maintenance

- Check the following points periodically to ensure proper performance.
- Check that each connector is firmly connected and is clean.
- Check the earth terminal for corrosion. If corroded, clean.

8.2.2 Cleaning

Dust on the display unit and display screen may be removed with a soft cloth. Do not use commercial cleaners to clean the display unit - they can remove paint and markings.

8.3 Simple Troubleshooting

The table below provides common problems and the means with which to restore normal operation. If normal operation cannot be restored do not attempt to check inside the equipment. Any servicing should be referred to a qualified technician.

Problem	Probable cause	Remedy
Power cannot be turned on.	 Mains switchboard may be off. DC overvoltage input. Battery may have discharged, or poor contact at terminals. 	 Turn on the mains switch Check supply voltage. Recharge battery and tighten battery terminals.
Display indications do not appear but key lamps are lit.	Contrast is too low.	 Press the [9/[®]) key followed by < or > to adjust the contrast.
Power is on but no sound from loudspeaker.	Loudspeaker is off.	 Operate the [7/¹] key to turn on the loud- speaker.

8.4 Error Messages

The table below shows error messages and their meanings.

Error message	Meaning	Remedy
Busy: RT	Radiotelephone is in operation.	Wait till the radiotelephone is free.
Channel Busy	You attempted to transmit on a	Message is automatically erased when the
	channel which is currently busy.	channel becomes clear.
	Routine and Business priority	
	oniy.	
EPFS error	No position data from navigator	Press the [CANCEL] key to silence alarm.
	for one minute.	Check the navigator. If it is malfunctioning
		manually enter position.
Incoming	Incoming DSC signal detected.	Message is automatically cleared when
		DSC signal is gone.
No position data	You attempted to enter position	Check the navigator. See the note at the
	automatically when there is no	bottom of page 3-3 for details.
	position data.	
No response: RT	Radiotelephone not powered or	Check radiotelephone.
	has been disconnected.	
Printer not ready	Appears if printer is not	Check printer.
	powered or has been	
	disconnected and automatic	
	printing is selected.	
Warning: Update	Position data is older by the	Press the [CANCEL] key to silence alarm.
position	amount of time preset on the	Reenter position on the Position menu.
	Alarm menu.	
Watchdog error. Please	Internal error (such as CPU	Turn the power off and on to restore normal
Power OFF	trouble) detected. Accompanied	operation. If normal operation cannot be
	with alarm, same type as for	restored, request service.
	distress.	

Error messages

8.5 Test Call

This function sends a test signal over one of six distress and safety frequencies to a coast station. For that reason, it should not be executed unnecessarily.

1. Press the [CALL] key at the DSC standby screen, and press the [ENT] key to open the CALL TYPE menu.



- 3. Press the [ENT] key to open the COAST ID menu.

*** Send	I message ***
CALL TYPE	
COAST ID	00000000
PRIORITY	: SAFETY
DSC FREQ	: 2187.5 KHZ
	GO TO ALL VIEW

How to input coast ID automatically

If you have previously registered some coast IDs, you can insert them into your message as follows:

1. Press the [FILE] key after completing step 2 in the above procedure. The following display appears.

Test ID file		Note: You can print the
300. FURUNO	•	Test ID file list by pressing
500. MARINE	►	the [8/PRINT] key.
777. ELECTRIC	►	
▲UP ▼DOWN		

- 3. Press the [ENT] key to insert ID number in message.
- 4. Key in the ID of the coast station ID (seven digits) to where to send the test call and press the [ENT] key.
- 5. Press the [ENT] key to open the DSC FREQ menu. (Note that PRIORITY is automatically selected to SAFETY.)

*** Send message ***			
CALL TYPE COAST ID PRIORITY DSC FREQ	2187.5 4207.5 6312.0 8414.5 12577.0 16804.5 MANUAL	(HZ	



6. Select an appropriate frequency and press the [ENT] key, and the display changes as below.

*** Send message ***		
CALL TYPE	: TEST	
COAST ID	: 001234567	
PRIORITY	: SAFETY	
DSC FREQ	: 2187.5 KHZ	
	GO TO ALL VIEW	

7. Press the [CALL] key to send the test call (transmission time: about 7 sec.). The display shows "Test call in progress!" while the test call is being transmitted.

Test call in prog	gres	s!
TO COAST SAFETY	:	001234567
DSC FREQ	:	2187.5 KHZ
TIME TO GO	:	7S

8. After the test call has been sent, the following message appears.

Waiting for test acknowledgement.		
FROM COAST: 001234567 SAFETY		
DSC FREQ	:	2187.5 KHZ
TIME TO GO	:	4M12S

9. One of the following displays appears. ("No response! Try calling again?" appears when the timer counts down to zero, meaning no response from coast station.)

Test acknowledge call received.		
FROM COAST: SAFETY NO INFORMATION	001234567	
S	TOP ALARM	

Test acknowledge received

No response! Try calling aga	in?
FROM COAST: SAFETY	001234567
DSC FREQ :	2187.5 KHZ
C	ALL AGAIN

No response to test call

10. Do one of the following depending on the message shown in step 9.

Test acknowledge call received

The audio alarm sounds; press the [CANCEL] key to silence the alarm. The display changes as below.

* Received message *		
JUL-23-1999-23:59 ECC : OK		
TEST ACKNOWLEDGEMENT		
FROM COAST : 001234567		
SAFETY		
NO INFORMATION		
GO TO ALL VIEW		

No response! Try calling again?

Re-send call: Press the [ENT] key (the display shown in step 6 appears) followed by the [CALL] key to re-send the test call.

Cancel call: Press the [CANCEL] key to return to the DSC standby screen.

Menu Tree



DSC Frequency Table

Tx (kHz)	Rx (kHz)	Remarks	File Name
2187.5	2187.5		
4207.5	4207.5		
6312.0	6312.0	Distress and	
8414.5	8414.5	Safety Frequencies	
12577.0	12577.0		
16804.5	16804.5		
458.5	455.5		INTL-0.4M
2189.5	2177.0		INTL-2M
4208.0	4219.5		INTL-4M
6312.5	6331.0		INTL-6M
8415.0	8436.5	International	INTL-8M
12577.5	12657.0	Frequencies	INTL-12M
16805.0	16903.0		INTL-16M
18898.5	19703.5		INTL-18M
22374.5	22444.0		INTL-22M
25208.5	26121.0		INTL-25M
4208.5	4220.0		LOCAL1-4M
6313.0	6331.5		LOCAL1-6M
8415.5	8437.0		LOCAL1-8M
12578.0	12657.5	Local-1	LOCAL1-12M
16805.5	16903.5	Frequencies	LOCAL1-16M
18899.0	19704.0		LOCAL1-18M
22375.0	22444.5		LOCAL1-22M
25209.0	26121.5		LOCAL1-25M
4209.0	4220.5		LOCAL2-4M
6313.5	6332.0		LOCAL2-6M
8416.0	8437.5		LOCAL2-8M
12578.5	12658.0	Local-2	LOCAL2-12M
16806.0	16904.0	Frequencies	LOCAL2-16M
18899.5	19704.5	1	LOCAL2-18M
22375.5	22445.0	1	LOCAL2-22M
25209.5	26122.0]	LOCAL2-25M

Digital Interface (IEC 61162-1 Edition 2)

Input sentences

GGA, GLL, RMA, RMC, ZDA

Schematic diagrams

NAV IN port (listener)



Load requirements as listner

Isolation	Optocoupler
Input impedance	430 ohms
Max.Voltage	±15V
Threshold	4mA

GGA-Global Positioninh system (GPS) fix data

\$--GGA,hhmmss.ss,IIII.III,a,yyyyy.yyy,a,x,xx,x.x,x.x,M,x.x,M,x.x,Xxxx*hh<CR><LF>



- 1. UTC of position
- 2. Latitude, N/S
- 3. Longitude, E/W
- 4. GPS quality indicator (see note)
- 5. Number of satllite in use,00-12, may be different from the number in view
- 6. Horizontal dilution of precision
- 7. Antenna altitude above/below mean sealevel, m
- 8. Geoidal separation, m
- 9. Age of differential GPS data
- 10. Differential reference station ID, 0000-1023
- 11. Checksum

NOTE

- 0 = fix not available or invalid
- 1 = GPS SPS mode, fix valid
- 2 = differential GPS, SPS mode, fix valid
- 3 = GPS PPS mode, fix valid
- 4 = Real Time Kinetic. Satellite system used in RTK mode with fixed integers
- 5 = Float RTK. Satellite system used in RTK mode with floating fingers
- 6 = Estimated (dead reckoning) mode
- 7 = Manual input mode
- 8 = Simulator mode

The GPS quality indicator shall not be a null field.

GLL-Geographic position-latitude and longitude



- 1. Latitude, N/S
- 2. Longitude, E/W
- 3. UTC of position
- 4. Status: A=data valid, V=data invalid
- 5. Mode indicator(see note)
- 6. Checksum

NOTE Positioning system Mode indicator:

- A = Autonomous
- D = Differential
- E = Estimated (dead reckoning)
- M = Manual input
- S = Simulator
- N = Data not valid

The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.

A-5

RMA-Recommemded minimum navigation information-Loran C data

\$--RMA,A,IIII.III,a,yyyyy.yy,a,x.x,x.x,x.x,x.x,x.x,a,a*hh<CR><LF>



- 1. Status: A=data valid, V=blink, cycle or SNR warning
- 2. Latitude, degrees N/S
- 3. Longitude, degrees E/W
- 4. Time difference A, microseconds
- 5. Time difference B, microseconds
- 6. Speed over ground, knots
- 7. Course over ground, degrees true
- 8. Magnetic variation(see note 1),degree E/W
- 9. Mode indicator(see note 2)
- 10. Checksum
- NOTE 1 Easterly variation(E) subtracts from true course Westerly variation(W) adds to true course

NOTE 2 Positioning system Mode indicator:

- A = Autonomous
- D = Differential
- E = Estimated (dead reckoning)
- M = Manual input
- S = Simulator
- N = Data not valid

The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.
RMC - Recommended minimum specific GPS/TRANSIT data

\$--RMC,hhmmss.ss,A,IIII.III,a,yyyyy,yyy,a,x.x,x.x,xxxxxx,x.x,a,a*hh<CR><LF>



- 1. UTC of position fix
- 2. Status: A=data valid, V=navigation receiver warning
- 3. Latitude, N/S
- 4. Longitude, E/W
- 5. Speed over ground, knots
- 6. Course over ground, degrees true
- 7. Date: dd/mm/yy
- 8. magnetic variation, degrees E/W
- 9. Mode indicator(see note)
- 10. Checksum

NOTE Positioning system Mode indicator:

- A = Autonomous
- D = Differential
- E = Estimated (dead reckoning)
- M = Manual input
- S = Simulator
- N = Data not valid

The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.

ZDA-Data and time



- 5. Local zone hours. 00h to +-13h
- 6. Local zone minutes, 00 to +59 as local hours
- 7. Checksum

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SPECIFICATIONS OF DSC/WATCH RECEIVER DSC-60

1. DSC TERMINAL

- (1) Line Out: 0 dBm (adjustable between -10 dBm and +10 dBm),
 600 ohms, balanced
- (2) Line In: -10 to +10 dBm, 600 ohms, balanced
- (3) Frequency Shift: Mark; 1615 Hz, Space; 1785 Hz
- (4) Baud Rate: 100 baud's $\pm 30 \times 10^{-6}$
- (5) Protocol: Complies with ITU-R Rec.493-9, 541-8, 1082-1

2. GMDSS DSC WATCH KEEPING RECEIVER

(1)	Receiving Frequency	
	For MF spec:	2187.5 kHz
	For MF/HF spec:	2187.5 kHz, 4207.5 kHz, 6312 kHz, 8414.5 kHz
		12577 kHz and 16804.5 kHz
(2)	Class of Emission:	F1B, J2B
(3)	Frequency Stability:	Within ±10 Hz
(4)	Intermediate Frequency:	1st: 54455 kHz, 2nd: 455 kHz
(5)	Selectivity:	-6 dB : 270 Hz or more
		-30 dB: within ±380 Hz
		-60 dB: within ±550 Hz
(6)	RF Input Impedance:	50 ohms
(7)	Receiving Sensitivity:	Better than 0 dB μ (at error rate within 1%)
(8)	Warming-up Time:	1 minute (oven 30 minutes)

3. GENERAL WATCH KEEPING RECEIVER (option)

- (1) Receiving Frequency 1.6 MHz to 27.5 MHz
- (2) Class of Emission: F1B, J2B

(5) Selectivity:

- (3) Frequency Stability: Within ±10Hz
- (4) Intermediate Frequency: 1st: 54455 kHz, 2nd: 455 kHz
 - -6 dB : 270 to 300Hz
 - -30 dB: within ±380Hz
 - -60 dB: within ±550Hz
- (6) RF Input Impedance: 50 ohms
- (7) Receiving Sensitivity: Better than 0 dB μ (at error rate within 1%)
- (8) Warming-up Time: 1 minute (oven 30 minutes)

4. MF/HF SSB TRANSCEIVER REMOTE STATION

- (1) Line Out: 0 dBm, 600 ohms, balanced
- (2) Line In: 0 dBm, 600 ohms, balanced
- (3) AF Input (Microphone): -46 dBm, 600 ohms, unbalanced
- (4) AF Output (Loudspeaker): 3 W, 4 ohms
 - (Handset): 1 mW, 200 ohms
- 5. DISPLAY
 - (1) LCD Unit: 120 x 64 dots
 - (2) Characters
 (2) Characters
 20 characters x 8 lines (1 character: 5 x 7 dot) max.
 20 characters x 10 lines (1 character: 5 x 5 dot) max.
 (3) Back-light: Yellow, 8 tones
 - (4) Contrast: 64 tones

6. I/O DATA

(1)	Nav. Data Input:	IEC61162-1, current loop; 1 pair/port
(2)	DMC:	IEC61162-1/RS232C or
		DMC OUT/IN/CTR H/C; 3 pairs/port
(3)	Received Call Output:	RCV BZ OUT/IN/CTR; 3 pairs/port
(4)	NBDP:	IEC61162-1/RS232C
(5)	Printer:	Centronics (parallel)
(6)	RT (MF/HF Transceiver):	IEC61162-1/RS232C,
		Line in: 0dBm, 600 ohms,
		Line out: 0dBm, 600 ohms,
		and other control signals

7. ENVIRONMENTAL CONDITION

- (1) Temperature: -15°C to +55°C
- (2) Relative Humidity: 93% (40°C)
- (3) Category of Equipment UnitDisplay Unit: Protected from the weather
- 8. POWER SUPPLY

24VDC (backed up by battery), 1 A, less than 24 W

9. COLOR

Panel: N3.0 (not changeable) Cabinet: 2.5GY5/1.5

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	Pub NO. DOC-953	
Declaration of c	onformity 0560	
We FURUNO ELECTRIC	CO., LTD.	
	Manufacturer)	
9-52 Ashihara-Cho, Nishinomiya City, 662-	8580, Hyogo, Japan	
	(Address)	
hereby declare under our sole responsibility	/ that the product	
MF/HF DSC watchkeeping receiver Type DSC-60 consisting of Printer PP-510, Remote distress button IC-302, Incoming indicator IC-303, Handset HSC701K-B20, AC-power supply PR-300, AC-power supply PR-240, External loudspeaker MX910-X01 and Second receiver board (routine) 05P0703		
(Model names, type numbers)		
to which this declaration relates conforms to the following standard(s) or normative document(s)		
StandardsImolectorIMO Resolutions MSC.36(63), MSC.97(73)ImolectorIMO Resolution A.806(19)ImolectorIMO Resolution A.694(17)ImolectorIMO MSC Circular MSC/Circ.862ITU-R Recommendations M.1082-1, M.1173, M.	<u>Fest standards</u> EN 300 338: 1999-04 V1.2.1, EN 301 033: 1998-08 V1.1.1 EN 60945: 1997-01 (IEC 60945 Ed.03: 1996-11) EC 61162-1: 2000-07 <i>I</i> .476-5, M.493-10, M541-8	
(title and/or number and date of issue of the standard(s) or other normative document(s))		
For assessment, see		
• EC type-examination certificate (Module B) N°: 99212022/AA/03 of 02 May 2007 issued by Telefication, The Netherlands		
 Product Quality System (Module D) certificate No. P 112 of 20 May 2005 issued by Telefication, The Netherlands 		
Test report 98540530 of 23 November 1999 issued by KTL, The Netherlands		
 Test report FLI 12-99-037 of October 26, 1999 issued by Furuno Labotech International Co., Ltd., Japan authorized by KCS Certification, The Netherlands 		
This declaration is issued according to the provisions of European Council Directive 96/98/EC on marine equipment modified by Commission Directive 2002/75/EC.		
	On behalf of Furuno Electric Co., Ltd.	
	Homadal	
Nishinomiya City, Japan May 07, 2007	Hiroaki Komatsu Manager, International Rules and Regulations	
(Place and date of issue)	(name and signature or equivalent marking of authorized person)	