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FURUNO

OPERATOR'S MANUAL

RADIO CONSOLE

MODEL RC-1500-1T

This manual covers the general description of the Radio Console. Refer to the separate manuals for detailed information on individual units mounted in the console.

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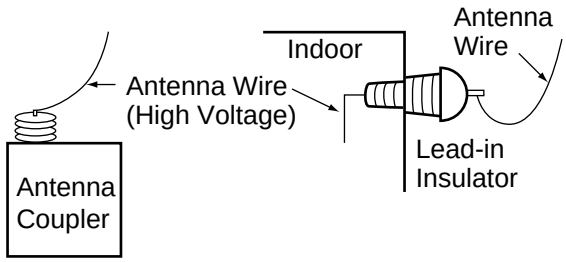
⚠ SAFETY INSTRUCTIONS

⚠ DANGER

Never touch the SSB antenna, antenna coupler or lead-in insulator when the SSB radiotelephone is transmitting.

High voltage which can cause death is present at the above-mentioned locations when the SSB radiotelephone is transmitting.

Turn off the power before performing maintenance on the SSB antenna.



⚠ WARNING

Keep sparks and lit smoking materials away from the lead-acid battery. Make sure the battery room is well ventilated.

The battery emits hydrogen gas which can cause explosion.

The electrolyte in the lead-acid battery contains sulfuric acid which can be harmful, particularly to the eyes.

If sulfuric acid contacts eyes, skin or clothing, flush directly with water. For eyes, contact a physician. Loss of eyesight can result.

The temperature of the electrolyte in the lead-acid battery should not exceed 45°C.

The electrolyte can cause explosion if it becomes too hot.

⚠ CAUTION

Keep fingers away from edges on the printer and cover.

Edges can cut fingers.

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SPECIFICATIONS _____ 1

Chapter 1 INTRODUCTION

1.1 System Diagram

The figure below shows the system diagram for the RC-1500-1T. Equipment are controlled using FURUNO's own radio interface system called MIF (see note below).

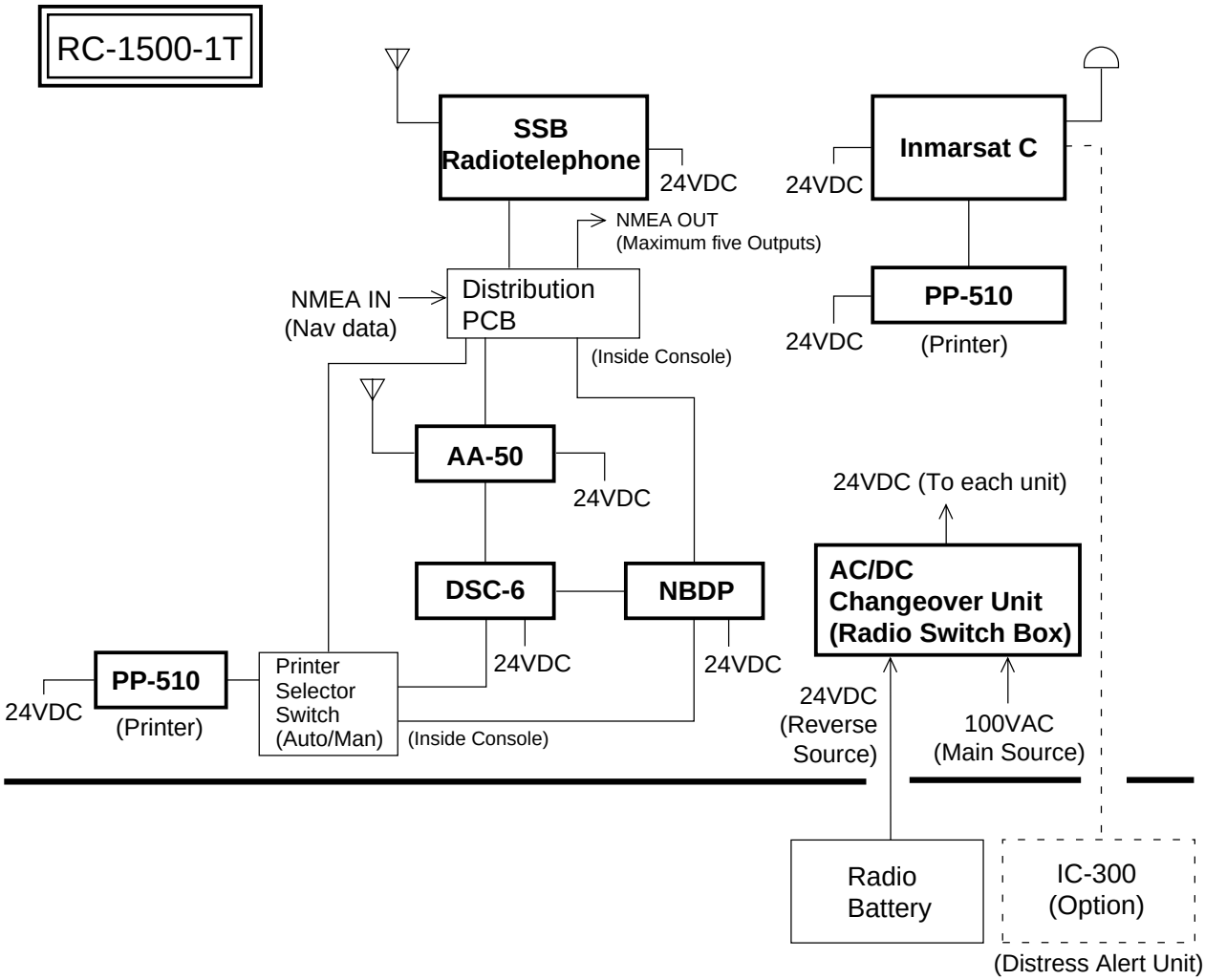
The type and number of the component differ from set to set.

This radio console may incorporate radiotelephone FS-1562-25 or the FS-5000. The operating procedures for both radiotelephones are described in chapter 2.

The radio console may incorporate NBDP DP-5 or DP-6. The operating procedures for both NBDP are described in chapter 5.

The radio console may incorporate Inmarsat C FELCOM 11 or FELCOM 12. The operating procedures for both Inmarsat C are described in chapter 6.

Note: MIF is a handshaking type signal exchange system developed by FURUNO for remote control of our radio equipment. In the RC-1500-1T, for example, the DSC-6 can automatically set the frequency on the FURUNO SSB Radiotelephone.



1.2 Equipment Description

Keep the all equipment powered while the vessel is underway by regulations.

FURUNO SSB Radiotelephone

For ship-ship and ship-station radio communications in the MF/HF band. The main communications modes used are;

- Voice communications (J3E/H3E) via the handset
- DSC communications (Telex) by the DSC-6
- Telex communications by the NBDP

DSC-6 MF/HF DSC Terminal

The DSC-6 has many functions. Below are its main functions.

- Distress alert: Transmit the distress alert via FURUNO SSB Radiotelephone.
- All Ships Call: For urgent situation on own ship (for example, request for medical assistance).
- Individual Call: Place a call to a specific ship or coast station.

AA-50 MF/HF DSC Receiver

Watches DSC distress and safety frequencies. The AA-50 receives distress alert from vessel in distress and all ships call (safety and urgent call) from ship or coast station.

NBDP

The NBDP provides Telex communications with coast stations over the MF/HF band via FURUNO SSB Radiotelephone. Furthermore, it can receive MSI (Maritime Safety Information) messages via FURUNO SSB Radiotelephone (Scan reception).

Inmarsat C Mobile Earth Station

Provides distress and general Telex communications for mobile and fixed terrestrial subscribers in the Inmarsat C communications network. Telex messages are processed by what is known as store-and-forward Telex. A Telex message transmitted by you arrives at a coast station where it is stored temporarily and then delivered to the subscriber specified (No full duplex communications possible.)

AC/DC Radio Switch Box

The AC/DC Radio Switch Box consists of a battery charger and two rectifiers (PR-850AR and PR-300) which can accept both AC and DC powers. In the event of main AC power failure, auxiliary power (battery) provides power to the equipment, for the amount of time stipulated by radio regulations.

1.3 Mutual Operation of Equipment

As noted earlier, the equipment in this radio console are interfaced by FURUNO's MIF radio interface. For example, to transmit a message over the DSC-6 or DP-5, the Tx and Rx frequencies and class of emission are automatically set on FURUNO SSB Radiotelephone and then the message is transmitted.

Two printers are supplied and one is dedicated to the Inmarsat C. The other printer is for both the DSC-6 and NBDP. If the NBDP is used (message transmission or reception), this printer is automatically connected to the NBDP to print out the data. When the printer selector switch in the console is set to the “AUTO” position, it automatically connects one of those equipment to the printer on a first-come-first-served basis. For example, if the DSC-6 is used (message transmission or reception), the printer selector switch automatically connects the printer to the DSC-6 and disconnects itself from other equipment.

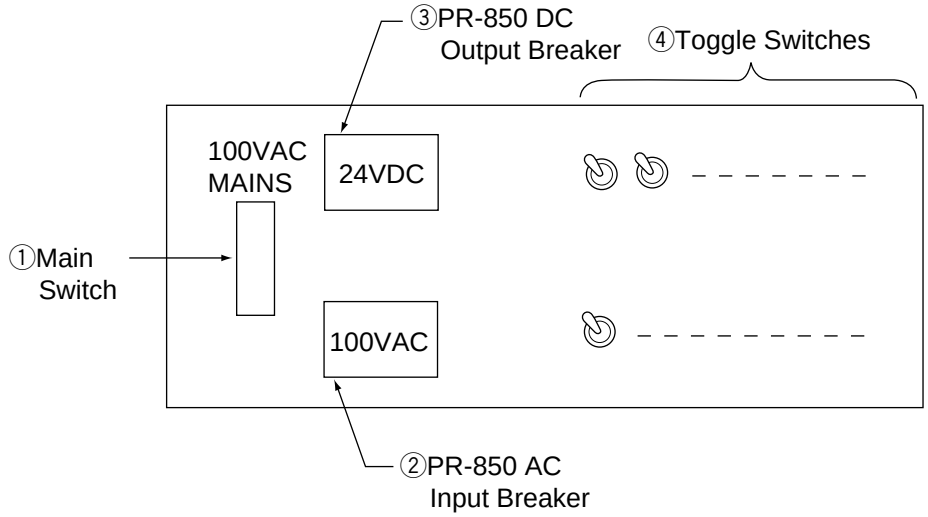
Connection between DSC-6 and NBDP

Suppose you transmitted a call over the DSC-6 and want to communicate with the receiving station by the NBDP instead of FURUNO SSB Radiotelephone. If the DSC-6 and NBDP were not connected you would have to set the several data such as working frequency, communication mode, etc. manually on the NBDP. Because they are connected by the remote function, however, the data mentioned above are automatically set on the NBDP via the DSC-6.

1.4 Power On/Off

Turning on the system

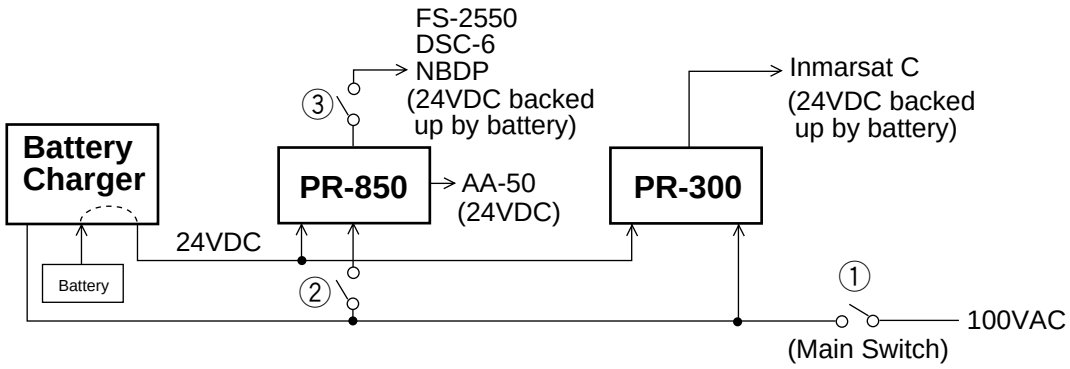
1. Turn on breakers and switches on the AC/DC Radio Switch Box in the following order:
   ① 100 VAC main power switch
   ② PR-850 AC input breaker
   ③ PR-850 DC output breaker
   ④ All toggle switches (any order) on right side
2. Turn on power switches (any order) of all equipment in the console.



Turning off the system

Reverse the order shown above.

(Reference)



Chapter 2 SSB Radiotelephone

For FS-1562-25

2.1 Remarks on Communications

Observe the following guidelines for radio communications:

1. General rules

All stations are forbidden to carry out;

- unnecessary communications
- the transmission of profane language
- the transmission of signals without identification

2. Silent times for distress frequency

Silent times are provided for the international distress frequency 2182 kHz for three minutes twice each hour beginning at 00 min and 30 min. Therefore, never transmit 2182 kHz during those times unless your vessel is in distress.

3. Avoid interference

All stations are forbidden to carry out;

- the transmission of superfluous signals and correspondence
- the transmission of false or misleading signals

All stations shall radiate minimum power necessary to ensure a satisfactory service.

4. Secrecy of communications

All administrations bind themselves to take the necessary measures to prohibit and prevent;

- the unauthorized interception of radio communications not intended for the general use of the public
- the divulgence of the contents, simple disclosure of the existence, publication or any use whatsoever, without authorization of information of any nature whatever obtained by the interception of the radio communications

5. Log important calls

All stations are required to record important calls such as distress, urgent and safety communications.

- time of transmission (start and stop), ship's position, weather condition
- subscriber's ID (identification) number or call sign
- used class of emission and frequency
- contents of call (for distress call, entire call)
- communications state (atmospherics, scrambled, if gain, other)

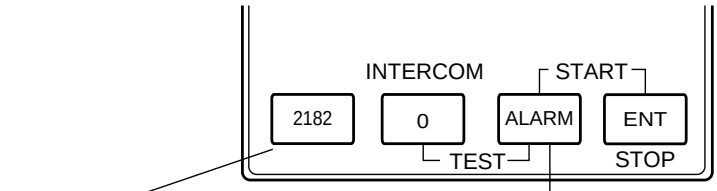
Also, log in results of all mandatory tests.

2.2 Distress Communications Procedure

Conduct distress communications as follows:

Procedure

1. Transmission of 2182 kHz two-tone alarm



① Press [2182] key.

② Press [ENT] key while pressing and holding down [ALARM] key.

Two-tone alarm is transmitted for 45 seconds.
(To suspend the alarm manually, press [ENT] key.)

③ Press the PTT switch on the handset to start the distress calling.

2. Distress calling

④ Say “MAYDAY, MAYDAY, MAYDAY” 3 times.

⑤ Say “THIS IS” once.

⑥ Say your vessel’s call sign or identification number 3 times.

3. Distress communications

Inform coast station of the following, in a clear voice.

⑦ MAYDAY

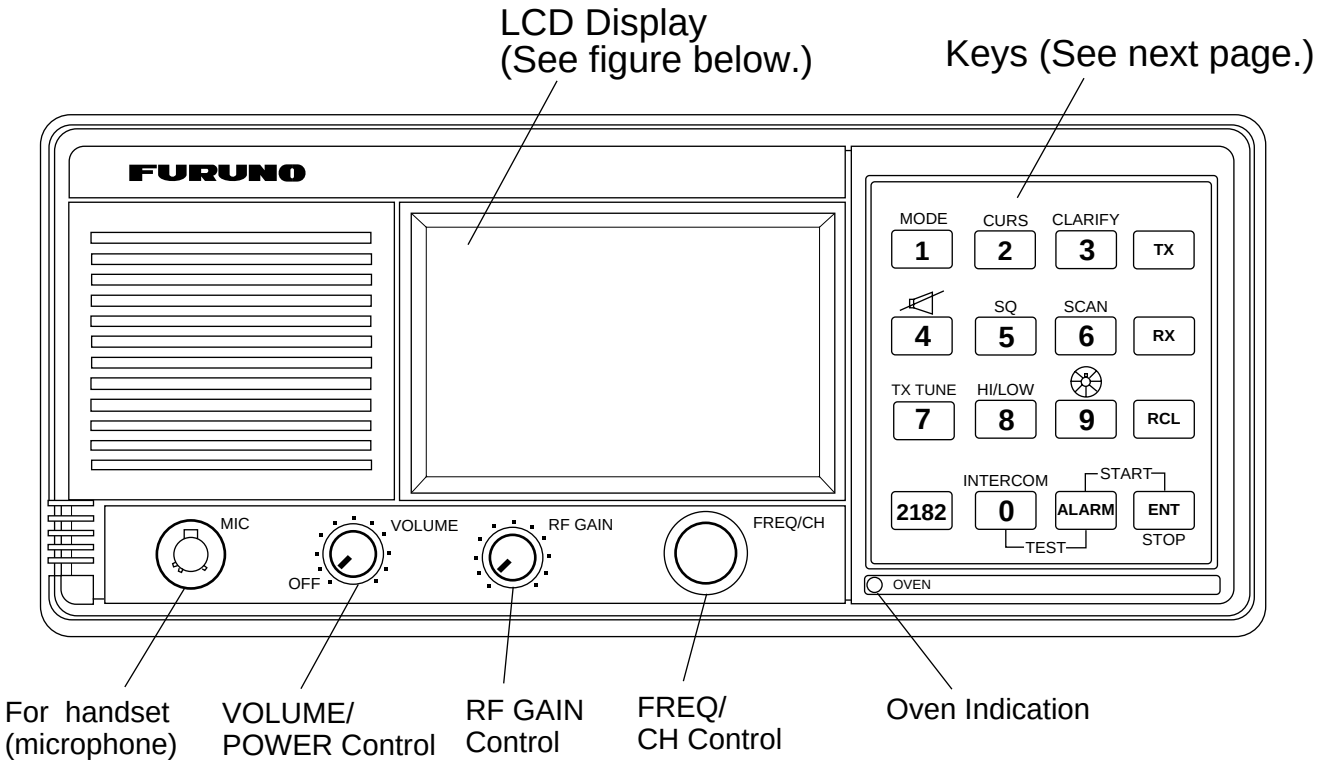
⑧ Your vessel’s name

⑨ Particulars of position

⑩ Nature of distress and kind of assistance desired

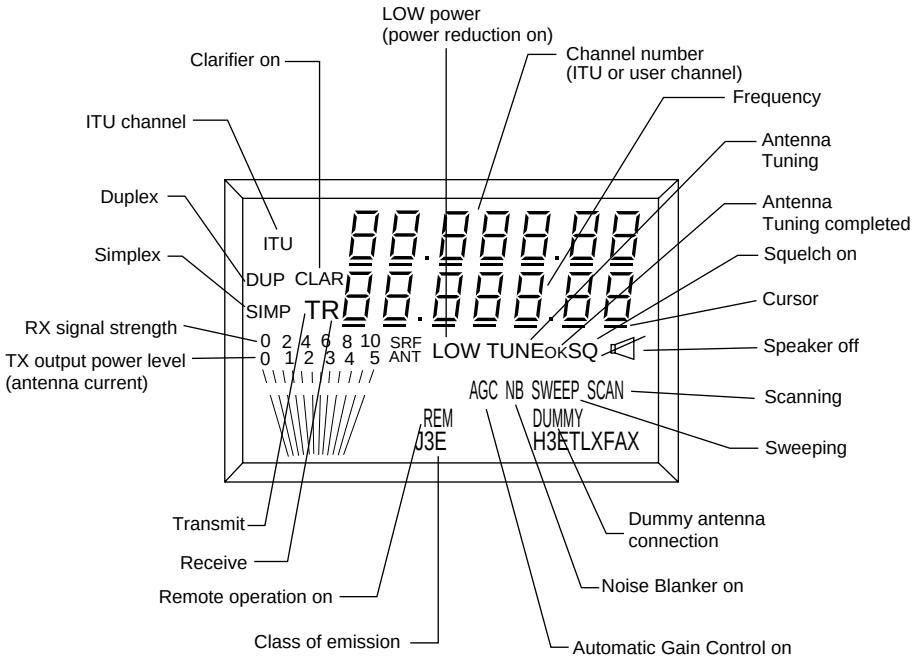
⑪ Any other information which might facilitate rescue

2.3 Control Description



LCD Display

The LCD shows various indications to alert you to equipment status.



Item		Key Operation
Selecting class of emission		The MODE [1] key selects class of emission as follows:(See list shown below.) → J3E → H3E → TLX → FAX →
Selecting Frequency	Direct key-in	[RX] ⇨ (Enter frequency.) ⇨ [ENT] [TX] ⇨ (Enter frequency.) ⇨ [ENT]
	Recalling user channel (registered by technician)	[RCL] ⇨ (Enter band and channel nos.) ⇨ [ENT] (ex) CH12 on 4MHz: 412 CH1 on 8MHz : 801
	Recalling ITU channel	[RCL] ⇨ (Select class of emission: J3E or TLX) ⇨ [CH] ⇨ (Enter band and channel nos.) ⇨ [ENT] (Note1) (ex) ● CH2 on 4MHz : 4002 ● CH114 (TLX) on 12MHz: 12114 (Add 0 between band and channel nos. when channel no. is either 1 or 2 digits.) (Note1) The CURS [2] key shifts the cursor to band or channel number. Then the [FREQ/CH] control changes number above the cursor.
Clarifying receiving signal		● For direct key-in (Shift cursor among last 4 places by pressing [CURS] key.) ⇨ Turn [FREQ/CH] control.
		● For ITU or user channel entry CLARIFY [3] ⇨ Turn [FREQ/CH] control. To return to original state, press CLARIFY [3] again.
Watching on TX frequency		[RX] (To return to previous state, press it again.)
Squelch (Noise elimination)		SQ [5] ----- ON: SQ appears. (To turn off, press SQ [5] again.)

List of Class of Emission

Indication	Class of Emission	Purpose
J3E	J3E (USB), J3C	SSB radiotelephone (J3C: Ship-to-Ship facsimile)
H3E	H3E, H2B	Calling coast station on 2182 kHz (equivalent to AM)
TLX	F1B (J2B)	Telex communication (For DP-5 and DSC-6)
FAX	F3C	Reception of weather facsimile (when FS-1562-25 is connected to facsimile)

Item		Key Operation
Tuning		Press TX TUNE [7] key or PTT switch on handset. (TUNE appears.)
Reducing output power		HI/LOW [8] (LOW appears.)
Scan (AGC: ON)	Start	(Recall ITU or user channel.) ⇨ (Shift cursor to band or channel number with CURS [2] .) ⇨ SCAN [6] (SCAN appears.) • Cursor is under band : Band scan • Cursor is under channel : Channel scan on a band
	Stop	SCAN [6]
Sweep (AGC: ON)	Start	(Enter center frequency.) ⇨ SCAN [6] (SWEEP appears.) Center frequency selected Sweep step width (Default:1KHz) Sweep width (Default:100kHz)
	Stop	SCAN [6]

Other features

Speaker on/off

The [🔈] key turns the loudspeaker on/off. When the loudspeaker is off " 🔈 " appears on the LCD.

Automatic power reduction

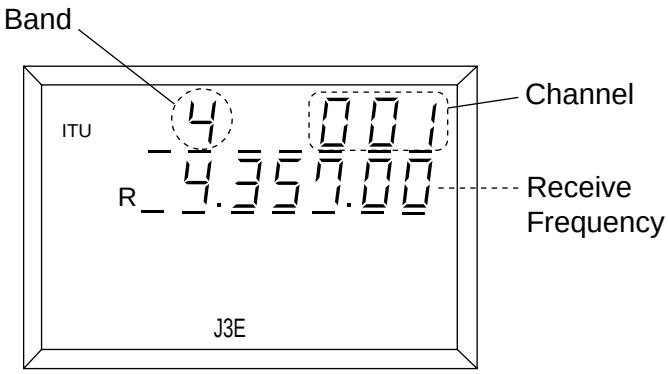
Power is automatically reduced to prevent equipment damage by overheating resulting from continuous transmission. The indication LOW ("LOW" blinks) replaces HIGH when this occurs. Then, wait until the equipment cools, or transmit in low power.

2.4 General Communications

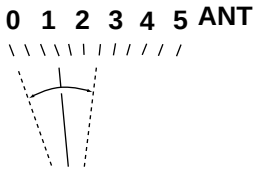
General communications procedure

First, turn on the power and adjust the RF GAIN and VOLUME controls. Then, to communicate with a coast station operating ITU SSB channel 401 (CH1 on 4 MHz band), for example, do the following:

1. Press [1] to select class of emission J3E.
2. Press [CH] [4] [0] [0] [1] [ENT] in that order.



3. Watch the channel for a while to make sure it is not occupied.
4. Pick up the handset and press the PTT switch. TUNE appears on the display along with Tx frequency. TUNE OK replaces TUNE when the transmitter has been tuned.
5. Press the PTT switch again to begin voice communications. While communicating confirm that the antenna current meter deflects with your voice level.



Pointer deflects rightward with voice when PTT switch is pressed.

6. To finish communications, replace handset in its receptacle.

For detailed communications procedure, see the next page.

Detailed communications procedure

1. Say call sign of party twice.
2. Say “THIS IS” once.
3. Say your call sign or identification number twice.
4. Say “OVER”.

If party could not be reached, wait more than one minute before trying again. If party still cannot be reached, wait more than three minutes before trying again.

When your station is called

1. Say call sign of party twice.
2. Say “THIS IS” once.
3. Say your call sign or indentification number once.

2.5 Mandatory Testing

Regulations require that the following three tests be conducted weekly and the results recorded in an appropriate log. If any test shows abnormality report it to a superior.

Two-tone alarm test

1. Confirm that the equipment is powered.
2. Press the [ALARM] key.
3. Confirm that the two-tone alarm sounds for 45 seconds. If suspension of aural alarm is necessary, press [ALARM] or [ENT] .

2182 kHz voice testing with dummy antenna

1. While pressing and holding down the [ALARM] key press the [INTERCOM 0] key. DUMMY appears on the display.
2. Making sure it is not silent time, press the PTT switch on the handset and speak into the handset. Confirm that the antenna current meter swings with voice.
3. About one minute later the dummy antenna is automatically disconnected. To do it manually, press [ALARM] or [INTERCOM 0] .

2182 kHz tuning test

1. Press the [2182] key.
2. Press the [TX TUNE 7] key. Several seconds later the display should show OK.

For FS-5000

2.6 Remarks on Communications

Observe the following guidelines for radio communications:

1. General rules

All stations are forbidden to carry out;

- unnecessary communications
- the transmission of profane language
- the transmission of signals without identification

2. Silent times for distress frequency

Silent times are provided for the international distress frequency 2182 kHz for three minutes twice each hour beginning at 00 min and 30 min. Therefore, never transmit 2182 kHz during those times unless your vessel is in distress.

3. Avoid interference

All stations are forbidden to carry out;

- the transmission of superfluous signals and correspondence
- the transmission of false or misleading signals

All stations shall radiate minimum power necessary to ensure a satisfactory service.

4. Secrecy of communications

All administrations bind themselves to take the necessary measures to prohibit and prevent;

- the unauthorized interception of radio communications not intended for the general use of the public
- the divulgence of the contents, simple disclosure of the existence, publication or any use whatsoever, without authorization of information of any nature whatever obtained by the interception of the radio communications

5. Log important calls

All stations are required to record important calls such as distress, urgent and safety communications.

- time of transmission (start and stop), ship's position, weather condition
- subscriber's ID (identification) number or call sign
- used class of emission and frequency
- contents of call (for distress call, entire call)
- communications state (atmospherics, scrambled, if gain, other)

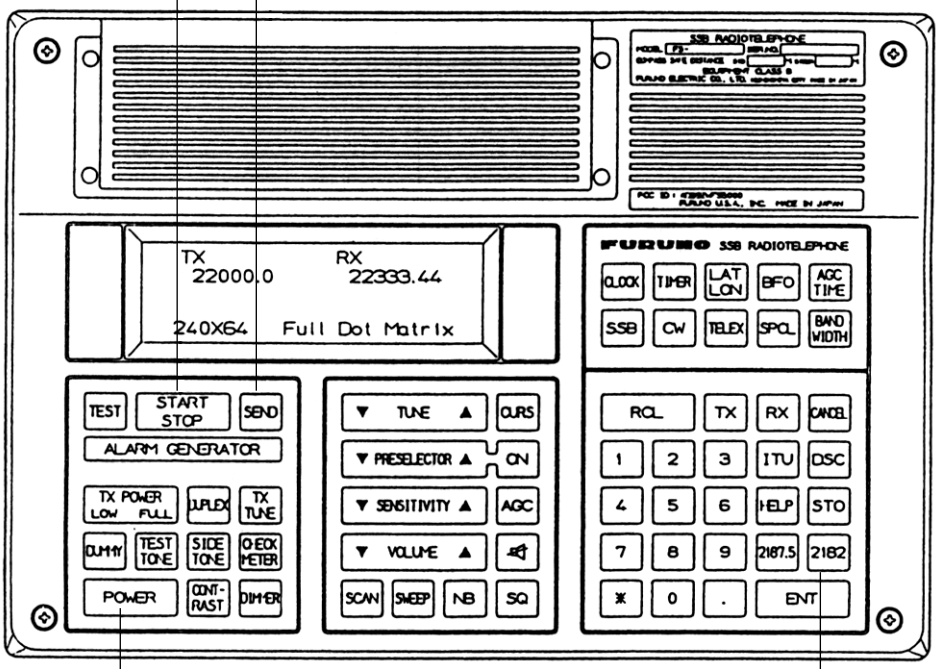
Also, log in results of all mandatory tests.

2.7 Distress Communications Procedure

NOTE: For installations which use an “antenna changer”, connect the antenna to the Antenna Coupler before transmitting the two-tone alarm.

④ Press the **START/STOP** key to transmit the two-tone alarm. (The alarm is released about 45 seconds.)
To stop transmission, press the **START/STOP** key again.

③ Press the **SEND** key.



① Turn the power on.

② Press the **2182** key.

⑤ Speaking slowly and distinctly, say **MAYDAY, MAYDAY, MAYDAY**. This is ... “giving the name of vessel and call sign three times. Then continue with the distress message, as follows.

⑥ The name of calling vessel.

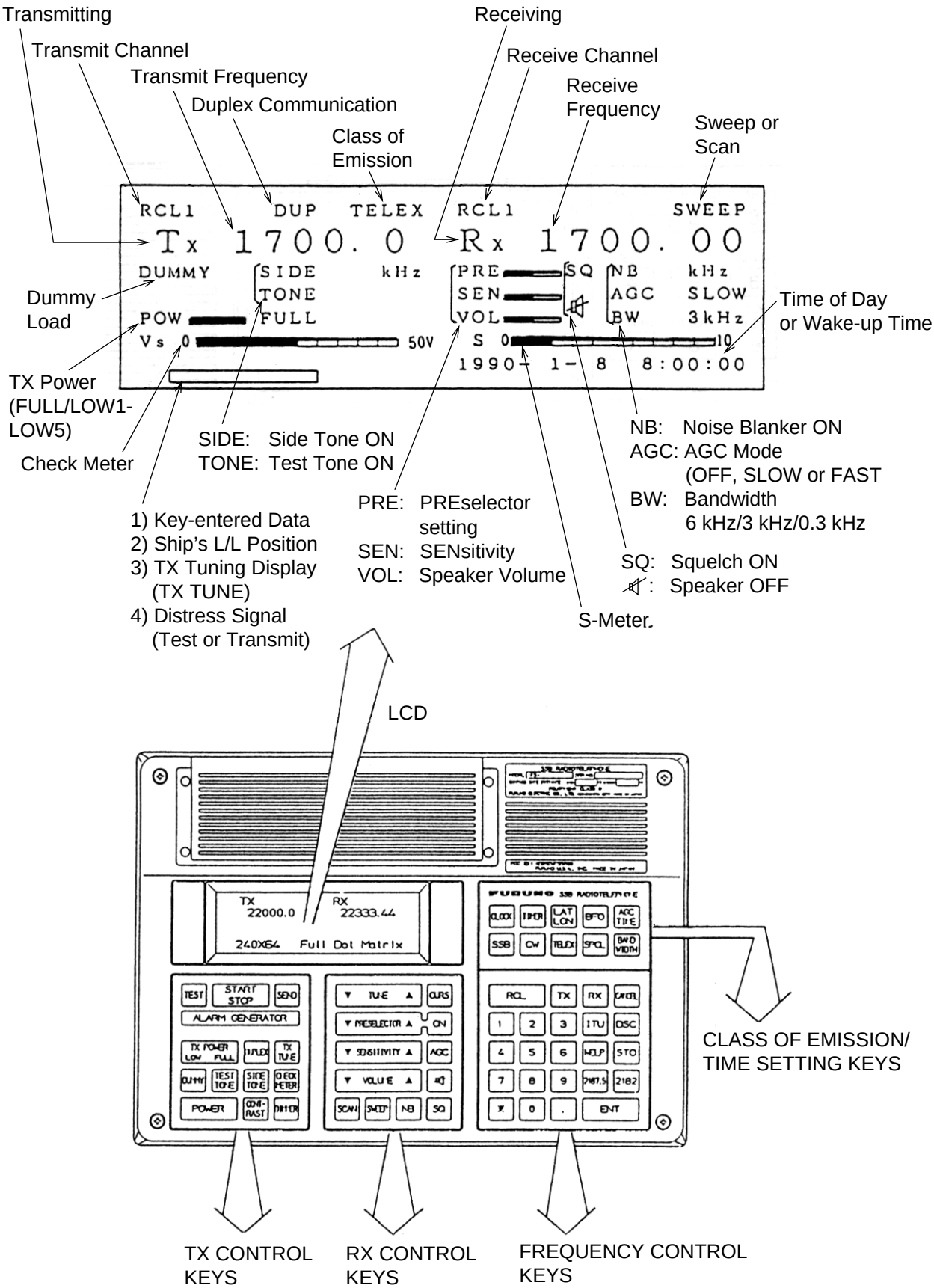
⑦ Position.

⑧ The assistance needed.

⑨ A description of vessel (type, color, number of persons aboard, etc.)

⑩ Indicate end of message by saying, Over.”

2.8 Control Description



USER (PRESET) CHANNEL			
Storing frequency		(Call up ITU or DSC CH.) STO (CH No.) ENT ENT 1 to 8999CH (Storage capacity: 400CH)	Class of emission & bandwidth are also stored.
Recalling freq.	TX/RX	RCL (CH No.) ENT	To see stored USER CH, Press RCL 9 9 9 8 ENT in that order.
	TX	RCL TX (CH No.) ENT	
	RX	RCL RX (CH No.) ENT	
Changing CH NO. quickly		Move the cursor to "CH No. indication" by using the CURS key. Then, press ▼ TUNE ▲ key. (This operation is available for ITU/DSC CH as well.)	
Watching TX freq. on two-frequency communication	Watch	RX ENT	
	Cancel	CANCEL	
ITU/DSC CHANNEL			
Recalling (Select class of emission prior to recalling.)	TX/RX	{ITU / DSC} (CH No.) ENT	CH No. DSC: 1 to 79CH ITU: (EX) Recalling of 401 CH 41, 401 or 4001
	RX	{ITU / DSC} RX (CH No.) ENT	
RX FREQ SETTING FROM KEYBOARD			
		RX (Freq. in kHz) ENT	
REMARKS ON RX			
Tuning (Preselector)		ON ▼PRESELECTOR▲	Effective for freq. less than 4.5 MHz.
When changing RX freq. band		TX TUNE (Change TX freq. band to agree with RX freq. band, then press this key.)	Only when ANT BK RELAY board is not provided in the ANT COUPLER.
Normal Setting		AGC---SLOW NB-----ON	

FREQUENCY SCANNING (AGC: ON)		
Starting	(Call up ITU, DSC or USER CH.) SCAN	CH / Scan range • DSC/ USER: All CH • ITU: Within band selected. (EX) ① Standard ---> "3" ② 5 sec. -------> "5"
Stopping	SCAN	
Changing the settings	STO SCAN ① (Set stop signal level) ENT ② (Set stop time) ENT	
FREQUENCY SWEEPING (AGC: ON)		
Starting	(Set RX freq.) SWEEP	
Stopping	SWEEP	
Changing the settings	STO SWEEP ① (Set sweep width freq.) ENT ② (Set step freq.) ENT ③ (Set stop signal level) ENT ④ (Set stop time) ENT	(EX) ① 10MHz ----> "10000" ② 100kHz ----> "100" ③ Standard ---> "3" ④ 5 sec. -------> "5"
TIMER		
Time setting	STO CLOCK (Y. M. D. H. M) ENT (EX) 1997-4-8 7H5M 9 7 . 4 . 8 . 7 . 5	
Timer	STO TIMER (D. H. M) ENT ---> Switch off after timer function is turned on ("Wake up" is displayed). (EX 1) 8H5M (daily) 8 . 5 (EX 2) 9th (day), 7H3M 9 . 7 . 3	

List of Class of Emission

Indication	Class of Emission	Purpose
J3E	J3E (USB), J3C	SSB radiotelephone (J3C: Ship-to-Ship facsimile)
H3E	H3E, H2B	Calling coast station on 2182 kHz (equivalent to AM)
TLX	F1B (J2B)	Telex communication (For DP-5 and DSC-6)
FAX	F3C	Reception of weather facsimile (when FS-5000 is connected to facsimile)

2.9 General Communications

Tuning the Power On And Off

To turn the power on or off, press and hold down the [POWER] key for more than one second. *The power cannot be applied when the power supply voltage is out of its rating.*

Adjusting LCD Contrast & Keyboard Illumination

The [CONTRAST] key adjusts LCD contrast, and the [DIMMER] key keyboard illumination.

Setting Date & Time

The internal real-time shows the date and time of day. To set the clock, press the [STO] key followed by the [CLOCK] key. Enter date and time followed by the [ENT] key.

Example: January 10, 1997, 9 hr. 32 min.

[9] [7] [.] [1] [.] [1] [0] [.] [9] [.] [3] [2] [ENT]
(press the [ENT] key in synchronization with a time signal)

The current date and time of day appear at the bottom right-hand corner of the LCD. *When the wake-up timer is turned on, the date and time of day display disappears, and vice versa.*

Setting the Wake-up Timer

The internal wake-up timer turns on the set at a predetermined time. The wake-up time can be a specific day and time, daily or hourly. To set the wake-up timer, press the [STO] key followed by the [TIMER] key. Enter the wake-up time desired followed by the [ENT] key. Use 24-hour notation to enter time. *The wake-up time appears at the bottom right-hand corner of the LCD.*

Specific Date & Time

To have the set turn on at 6:05 on the 11th day of current month, for example, press;

[1] [1] [.] [6] [.] [5] [ENT]

Daily

To have the set turn on daily at 8:30, for example, press [8], [.] [3] and [ENT].

Hourly

To have the set turn on hourly on the 6th minute, for example, press [6], and [ENT].

Class of Emission Selection

To select class of emission SSB, CW or TELEX, press the corresponding key. For other class of emissions, use the [SPCL] key. Each time the key is pressed the class of emission changes in the following sequence.

→ AM → R3E → FAX(weather fax) → LSB →

Frequency Selection

Conventions

- Entered data appears at the lower left-hand side of the LCD.
- The [ENT] key functions to terminate keyboard operation. When the key is pressed, the LCD displays OK to confirm that the unit has received the operator's command. For invalid key operation, the unit releases three audible beeps and clears the LCD.
- The [CANCEL] key cancels wrongly entered data.

Function		Keying Sequence	Remarks
Direct Frequency Input	TX (*1)	**TX frequency ENT**	**TX Freq. Range: 1606.5 kHz to 29999.9 kHz**
	RX	**RX frequency ENT**	**RX Freq. Range: 10 kHz to 29999.99 kHz**
	TX/RX (*1)(*2)	**TX RX frequency ENT**	
ITU Channel	TX (*1) (*2)	**TX ITU** channel no. **ENT**	Select class of emission beforehand. ITU channel may be entered as 41, 401 or 4001.
	RX (*2)	**RX ITU** channel no. **ENT**	
	TX/RX (*1)	**ITU** channel no. **ENT**	
User Channel	TX (*2)	**TX RCL** channel no. **ENT**	User channel must be stored in the memory.
	RX (*2)	**RX RCL** channel no. **ENT**	
	TX/RX	**RCL** channel no. **ENT**	

Function		Keying Sequence	Remarks
Copy RX freq. to TX freq. (Watch of TX freq. on duplex channel)		**RX** **ENT** **ENT (*3)**	
Copy TX freq to RX freq. (*1)		**TX** **ENT** **ENT (*3)**	
Alternate selection of TX and RX frequencies. (*1) (*2)		**TX** **RX** **ENT** **ENT (*3)**	Exchange between TX and RX freq.
Immediate selection of 2182, 2187.5	2182	**2182**	
	2187.5	**2187.5**	
DSC calling	TX (*1) (*2)	**TX** **DSC** channel no. **ENT**	Range of channel numbers is 1 to 79.
	RX (*2)	**RX** **DSC** channel no. **ENT**	
	TX/RX (*1)	**DSC** channel no. **ENT**	
Storing/clearing user channels (*4)	Storing (*1)	**(*) STO** channel no. **ENT** **ENT (*3)** **(*):** Determine TX or RX frequency, class of emission and bandwidth before hitting the **STO** key.	channel setting range is 1-8999, max. 400 channels.
	Clearing (*1)	**STO** channel no. **ENT** **0** **ENT**	

(*1) Capability depending on regulations.

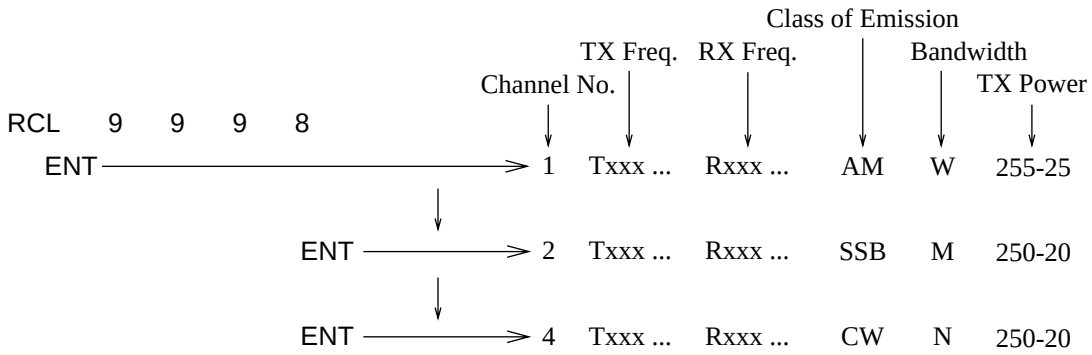
(*2) Sequence of operation for selecting TX or RX and channel may be reversed. For example: [TX], [ITU] or [ITU], [TX].

(*3) The [ENT] key must be pressed twice to affect a reaction. When you desire to cancel this function, press the [CANCEL] key after pressing the [ENT] key once.

(*4) To clear all user channels, change specification 9997. Refer to operation's manuall.

Viewing the Contents of User CH.

To view the contents of user channel, press;



To escape, press any key.

2.10 Receiving

Function		Keying Sequence	Remarks
Fine tuning		**CURS** **TUNE**	Place the cursor on the digit (1 kHz, 100 Hz, 10 Hz places) to be changed and then press the **TUNE** key. In AM, 1 k, 10 k and 100 kHz places can be changed.
Tune receive signal. (preselector on/off)		**ON OFF** **PRESELECTOR**	Effective for frequencies below 4.5 MHz.
Adjust receive sensitivity.		**SENSITIVITY**	Adjust so that signal is picked up.
Adjust speaker volume.		**VOLUME**	
Adjust AGC.	ON/OFF	**AGC**	
	Curve	**AGC TIME** (FAST/SLOW)	
Select bandwidth.		**BANDWIDTH** (6 kHz/3 kHz/0.3 kHz)	
Select BFO frequency.		**BFO** frequency **ENT**	For CW, TELEX and FAX only.
Turn the squelch circuit on or off.		**SQ**	
Turn the noise blanker circuit on or off.		**NB**	When the radio is just turned on, or frequency is just changed, it may take a few seconds to make the NB effective.
Turn the speaker on or off.		 appears when the speaker is off.	
Reading signal strength.			The S-meter displays receive signal strength when the AGC is on.

S meter indication

The S meter bar graph indicates the strength of received signal with AGC turned on. It is used for settings of "Scan/Sweep stop signal level". First, adjust the SENSITIVITY key so that white noise is slightly heard, and then read the value of the S meter bar graph. (This value is used for "Scan/Sweep stop signal level settings". Refer to page 2-17.)

Note: When the receiving band is changed (with 50 ohm BK relay used), tune the antenna coupler by selecting a TX frequency in the same band and pressing the [TX TURN] key.

2.11 Scan Receiving (AGC on)

Function	Keying Sequence/Remarks
Select memory-stored channel.	For DSC and user channels, the receiver scans all chennels. For ITU channels, the receiver scans the channels in the band selected by the operator. Example: user channel 5 **RCL 5 ENT** RCL5 RCL5
To being scanning.	**SCAN** (The receiver scans memory stored TX/RX frequency pairs according to predetermined parameters. Note that some authorities prohibit scan receiving.)
To stop scanning.	**SCAN**

Setting Scan Parameters

[Example
Stop S Level: 5
Stop Time: 2 sec]

1. Press the STO key followed by the SCAN key. The scan stop signal level setting screen appears.

```
SCAN stop S level [3,0-10]_
```

2. Enter a value among 0-10 seconds followed by the ENT key. The scan stop time setting screen appears.

```
SCAN stop S level [3,0-10] 5
```

S meter indication (Ref. to page 2-16.) "0"~"10"

3. Enter a scan stop time followed by the ENT key.

```
SCAN stop time [1 sec]_
```

Viewing Scan Parameters

To view scan parameters, press STO, SCAN and ENT keys in that order.

```
SCAN stop time [1 sec] 2
```

Integral number

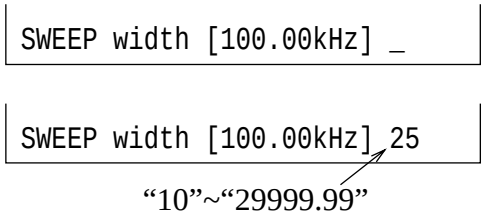
2.12 Sweep Receiving (AGC on)

Function	Keying Sequence/Remarks
Set center frequency for sweep receiving.	Example: 4350 kHz **RX 4 3 5 0 ENT**
To start sweeping.	**SWEEP** (The receiver sweeps frequencies according to predetermined parameters.)
To stop sweeping.	**SWEEP**

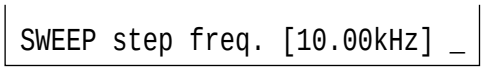
Setting Sweep Parameters

[Example
Sweep Width: 25 kHz, Step Freq.: 1.5 kHz,
Stop S Level: 5, Stop Time: 2 sec]

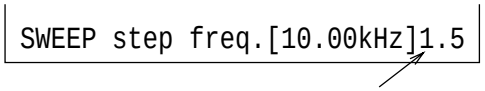
1. Press the STO key followed by the SWEEP key. The sweep width frequency setting screen appears. Enter a value among 10 to 29999.99 kHz followed by the ENT key. The sweep step frequency setting screen appears.



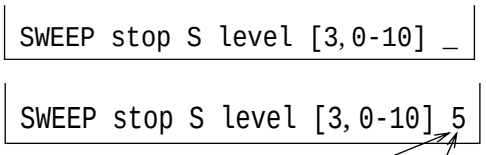
2. Enter the sweep step frequency desired among 0.01 to 29999.99 kHz followed by the ENT key. The sweep stop level setting screen appears.



3. Enter a sweep stop level among 0 to 10 followed by the ENT key. The sweep stop time setting screen appears.

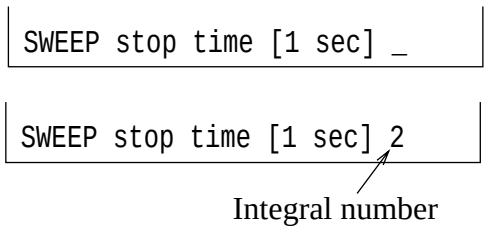


4. Enter a sweep stop time followed by the ENT key.



Viewing Sweep Parameters

To view sweep parameters, press the STO, SWEEP and ENT keys in that order.



2.13 Transmitting

Function	Keying Sequence	Remarks
Adjust transmitter output power.	max. output power...**FULL** (FULL) low output power.....**LOW** (LOW1, etc.)	
Duplex communication.	**DUPLEX**	Receiving antenna required. To reduce transmission noise, AGC time and NB should be set at “FAST” and “ON”, respectively.
To test transmitter by dummy load.	**DUMMY**	Dummy load required (in antenna coupler). Refer to the operator's manual. For two-tone test using dummy load, refer to page 2-20.
Tuning to antenna.	**TX TUNE** (whenever the key is pressed, tuning starts)	Initial press of PTT switch after selecting frequency also starts tuning.

During transmission, the FS-5000 monitors final stage temperature, final stage transistor collector current and antenna matching. If any abnormality is detected, output power is reduced automatically and “LOW1” may be displayed on the LCD display.

2.14 Mandatory Testing

The two-tone alarm generator should be checked weekly.

Two-tone alarm test

1. Turn on the set.
2. Press the [TEST] and [START] keys in that order.
3. Confirm that the two-tone alarm is released for more than 30 seconds.
4. Press the [STOP] key.
5. Confirm that the alarm turns off.

2182 kHz voice testing with dummy antenna (Optionl supply)

1. Press the [DUMMY] key.
2. Select a frequency near 2182 kHz.
3. Select AM (H3E).
4. Communicate with the handset, confirming that antenna current (Ia) flows with voice level.

Testing the Transmitter by Dummy Antenna and Tow-tone Alarm Signal (required by SOLAS)

Method 1

1. Press [STO], [9], [9], [1], [1], [ENT], [1], [ENT] key in that order.
2. Press [STO], [9], [9], [1], [2], [ENT] key.
   2191 kHz will be displayed (if necessary, this frequency can be changed; but do not select 2182 kHz.)
3. If the frequency is OK, press [ENT] key.
4. Press [TEST] and then [START] key. The dummy antenna is connected automatically and the two-tone alarm signal is emitted.

After completion of the test, restore the system setting of 9911 to the default setting.

Method 2

1. Set the frequency other than 2182 kHz.
2. Set the class of emission to “AM”.
3. Press [DUMMY], [TEST], [START] in this order. Then transmit by pressing the PTT switch.

FURUNO

ITU SSB FREQUENCY TABLE FOR FURUNO SSB RADIOTELEPHONES

1991/10 ITUSSB

1			2			3			4			5			6					
4 MHz BAND			6 MHz BAND			8 MHz BAND			12 MHz BAND			16 MHz BAND			18/19 MHz BAND			22 MHz BAND			25/26 MHz BAND		
No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX
300	3023	3023	600	6215	6215	800	8291	8291	1200	12290	12290	1600	16420	16420									
400	4125	4125																					
500	5680	5680																					
401	4065	4357	601	6200	6501	801	8195	8719	1201	12230	13077	1601	16360	17242	1801	18780	19755	2201	22000	22696	2501	25070	26145
402	4068	4360	602	6203	6504	802	8198	8722	1202	12233	13080	1602	16363	17245	1802	18783	19758	2202	22003	22699	2502	25073	26148
403	4071	4363	603	6206	6507	803	8201	8725	1203	12236	13083	1603	16366	17248	1803	18786	19761	2203	22006	22702	2503	25076	26151
404	4074	4366	604	6209	6510	804	8204	8728	1204	12239	13086	1604	16369	17251	1804	18789	19764	2204	22009	22705	2504	25079	26154
405	4077	4369	605	6212	6513	805	8207	8731	1205	12242	13089	1605	16372	17254	1805	18792	19767	2205	22012	22708	2505	25082	26157
406	4080	4372	606	6215	6516	806	8210	8734	1206	12245	13092	1606	16375	17257	1806	18795	19770	2206	22015	22711	2506	25085	26160
407	4083	4375	607	6218	6519	807	8213	8737	1207	12248	13095	1607	16378	17260	1807	18798	19773	2207	22018	22714	2507	25088	26163
408	4086	4378	608	6221	6522	808	8216	8740	1208	12251	13098	1608	16381	17263	1808	18801	19776	2208	22021	22717	2508	25091	26166
409	4089	4381	609	6224	6224	809	8219	8743	1209	12254	13101	1609	16384	17266	1809	18804	19779	2209	22024	22720	2509	25094	26169
410	4092	4384	610	6227	6227	810	8222	8746	1210	12257	13104	1610	16387	17269	1810	18807	19782	2210	22027	22723	2510	25097	26172
411	4095	4387	611	6230	6230	811	8225	8749	1211	12260	13107	1611	16390	17272	1811	18810	19785	2211	22030	22726	2511	25100	25100
412	4098	4390				812	8228	8752	1212	12263	13110	1612	16393	17275	1812	18813	19788	2212	22033	22729	2512	25103	25103
413	4101	4393				813	8231	8755	1213	12266	13113	1613	16396	17287	1813	18816	19791	2213	22036	22732	2513	25106	25106
414	4104	4396				814	8234	8758	1214	12269	13116	1614	16399	17281	1814	18819	19794	2214	22039	22735	2514	25109	25109
415	4107	4399				815	8237	8761	1215	12272	13119	1615	16402	17284	1815	18822	19797	2215	22042	22738	2515	25112	25112
416	4110	4402				816	8240	8764	1216	12275	13122	1616	16405	17287	1816	18825	18825	2216	22045	22741	2516	25115	25115
417	4113	4405				817	8243	8767	1217	12278	13125	1617	16408	17290	1817	18828	18828	2217	22048	22744	2517	25118	25118
418	4116	4408				818	8246	8770	1218	12281	13128	1618	16411	17293	1818	18831	18831	2218	22051	22747			
419	4119	4411				819	8249	8773	1219	12284	13131	1619	16414	17296	1819	18834	18834	2219	22054	22750			
420	4122	4414				820	8252	8776	1220	12287	13134	1620	16417	17299	1820	18837	18837	2220	22057	22753			
421	4125	4417				821	8255	8779	1221	12290	13137	1621	16420	17302	1821	18840	18840	2221	22060	22756			
422	4128	4420				822	8258	8782	1222	12293	13140	1622	16423	17305	1822	18843	18843	2222	22063	22759			
423	4131	4423				823	8261	8785	1223	12296	13143	1623	16426	17308				2223	22066	22762			
424	4134	4426				824	8264	8788	1224	12299	13146	1624	16429	17311				2224	22069	22765			
425	4137	4429				825	8267	8791	1225	12302	13149	1625	16432	17314				2225	22072	22768			
426	4140	4432				826	8270	8794	1226	12305	13152	1626	16435	17317				2226	22075	22771			
427	4143	4435				827	8273	8797	1227	12308	13155	1627	16438	17320				2227	22078	22774			
428	4351	4351				828	8276	8800	1228	12311	13158	1628	16441	17323				2228	22081	22777			
429	4354	4354				829	8279	8803	1229	12314	13161	1629	16444	17326				2229	22084	22780			
430	4146	4146				830	8282	8806	1230	12317	13164	1630	16447	17329				2230	22087	22783			
431	4149	4149				831	8285	8809	1231	12320	13167	1631	16450	17332				2231	22090	22786			
432	4000	4000				832	8288	8812	1232	12323	13170	1632	16453	17335				2232	22093	22789			
433	4003	4003				833	8291	8291	1233	12326	13173	1633	16456	17338				2233	22096	22792			
434	4006	4006				834	8707	8707	1234	12329	13176	1634	16459	17341				2234	22099	22795			
435	4009	4009				835	8710	8710	1235	12332	13179	1635	16462	17344				2235	22102	22798			
436	4012	4012				836	8713	8713	1236	12335	13182	1636	16465	17347				2236	22105	22801			
437	4015	4015				837	8716	8716	1237	12338	13185	1637	16468	17350				2237	22108	22804			
438	4018	4018				838	8294	8294	1238	12341	13188	1638	16471	17353				2238	22111	22807			
439	4021	4021				839	8297	8297	1239	12344	13191	1639	16474	17356				2239	22114	22810			
440	4024	4024				840	8101	8101	1240	12347	13194	1640	16477	17359				2240	22117	22813			
441	4027	4027				841	8104	8104	1241	12350	13197	1641	16480	17362				2241	22120	22816			
442	4030	4030				842	8107	8107	1242	12353	12353	1642	16483	17365				2242	22123	22819			
443	4033	4033				843	8110	8110	1243	12356	12356	1643	16486	17368				2243	22126	22822			
444	4036	4036				844	8113	8113	1244	12359	12359	1644	16489	17371				2244	22129	22825			
445	4039	4039				845	8116	8116	1245	12362	12362	1645	16492	17374				2245	22132	22828			
446	4042	4042				846	8119	8119	1246	12365	12365	1646	16495	17377				2246	22135	22831			
447	4045	4045				847	8122	8122				1647	16498	17380				2247	22138	22834			
448	4048	4048				848	8125	8125				1648	16501	17383				2248	22141	22837			
449	4051	4051				849	8128	8128				1649	16504	17386				2249	22144	22840			
450	4054	4054				850	8131	8131				1650	16507	17389				2250	22147	22843			
451	4057	4057				851	8134	8134				1651	16510	17392				2251	22150	22846			
452	4060	4060				852	8137	8137				1652	16513	17395				2252	22153	22849			
						853	8140	8140				1653	16516	17398				2253	22156	22852			
						854	8143	8143				1654	16519	17401				2254	22159	22159			
						855	8146	8146				1655	16522	17404				2255	22162	22162			
						856	8149	8149				1656	16525	17407				2256	22165	22165			
						857	8152	8152				1657	16528	16528				2257	22168	22168			
						858	8155	8155				1658	16531	16531				2258	22171	22171			
						859	8158	8158				1659	16534	16534				2259	22174	22174			
						860	8161	8161				1660	16537	16537				2260	22177	22177			
						861	8164	8164				1661	16540	16540									
						862	8167	8167				1662	16543	16543									
						863	8170	8170				1663	16546	16546									
						864	8173	8173															
						865	8176	8176															
						866	8179	8179															
						867	8182	8182															
						868	8185	8185															
						869	8188	8188															
						870	8191	8191															

Chapter 3 DSC-6

3.1 What is the DSC-6?

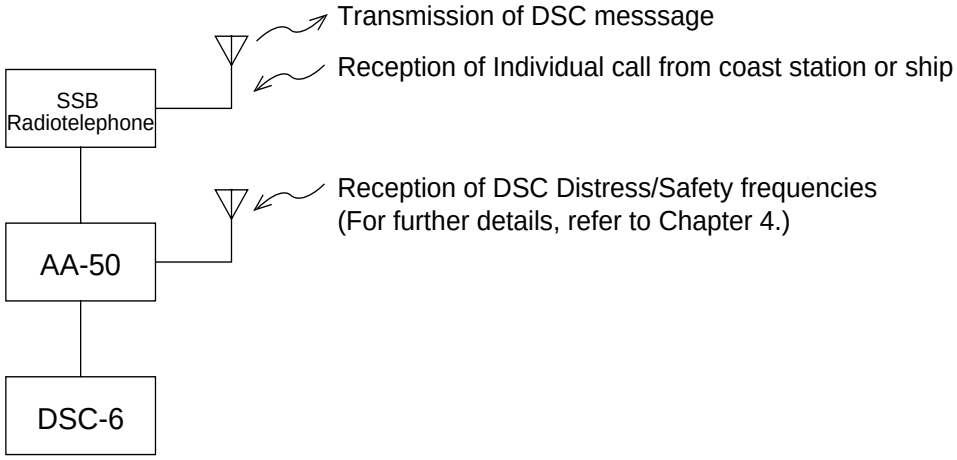
1. Overview

The DSC-6 is a DSC (Digital Selective Calling) Terminal providing distress, all ships and individual calling formats for coast stations and marine vessels in the MF/HF band. Furthermore, the DSC-6 receives calls (distress, all ships and individual) from other stations.

The DSC-6 provides many types of calling formats, however the main three are as follows:

Calling type	**Purpose**
1. Distress call ----------	Transmit the distress alert to a coast station when your ship is in distress.
2. All Ships call ----------	When an urgent situation (for example, engine trouble, request for medical assistance or transmission of important navigation safety information) occurs on your ship, transmit it to all ships including coast stations.
3. Individual call ----------	Call a specific station or ship. The receiving station transmits an acknowledge signal to the transmitting station to acknowledge receipt of message.

The DSC-6 does not function if no SSB radiotelephone is connected; it requires connection to an SSB radiotelephone as below.



The DSC-6 will be connected to a printer via a printer selector switch on the chassis of the rack console. This switch enables auto and manual printing. With the printer selector switch set to the “AUTO” or “DSC” position, all transmit and receive DSC messages are automatically printed. As of June, the printer is connected to both the DSC-6 and the DP-5 via interface, printing out the data on a first-come-first-served basis.

2. Contents of DSC message

The contents of a DSC message change with calling type, however most DSC messages contain the following:

DSC message content	Meaning
1. Calling format	One of Distress, Safety, Individual, etc.
2. Communications priority	One of Distress, Urgency, Safety or Routine.
3. Class of emission and working frequency	After transmitting a DSC message, voice communications begin with a receiving station over class of emission and working frequency designated here by your station.

Additional data

An Individual call contains the ID of the receiving station (input manually) to denote which station is to receive the call.

The Distress call contains position and time (see Note 1 below) and, time permitting, nature of distress (with numeric key).

Note 1: Position is automatically input by radionavigational equipment and time by the DSC-6's internal clock.

Note 2: Your ship's ID is automatically input on all outgoing DSC messages. (Your ship's ID is entered by the installer of the equipment. If it is wrong, contact a FURUNO agent or dealer. Regulations prohibit change of the ID by radio operator.)

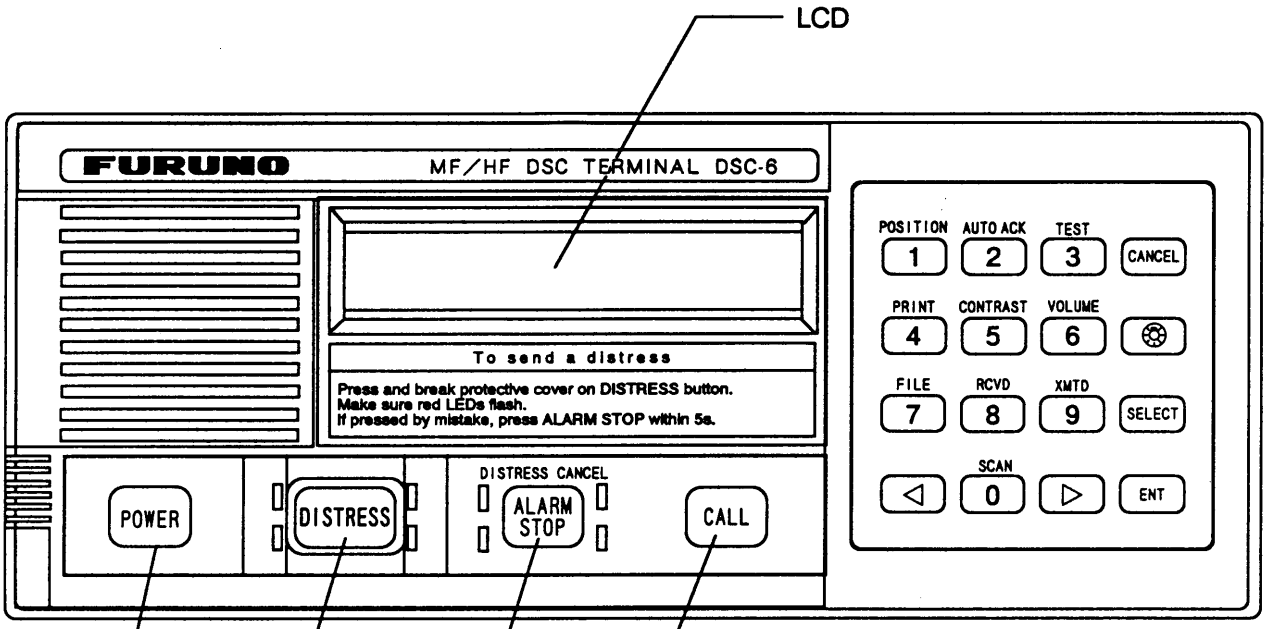
All DSC messages are transmitted by the SSB Radiotelephone over a DSC frequency (class of emission is Telex).

3. Power the DSC-6 while underway

The DSC-6 must be ready to transmit a DSC distress alert at any time. Therefore, turn on both the DSC-6 and the SSB Radiotelephone while the vessel is underway.

To transmit the distress alert, peel off the red seal and then press the DISTRESS key.

3.2 Control Description



CALL : Transmits messages other than distress.

(DISTRESS CANCEL)
ALARM STOP : Silences the receive alarm.
Stops repetitive alerts.

DISTRESS : Transmits the distress alert.
(Press the key 4 sec continuously.)

POWER : Turns power on and off. To turn the power off, press and hold down the switch at least two seconds. Then, release the key after a loud beep is heard.

About LED

The four LEDs (Red) blink when the DISTRESS key is pressed, and light continuously when the distress alert is completely transmitted.

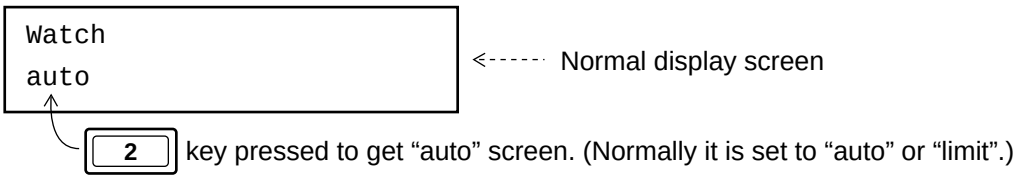
- Upper two LEDs (Red) blink when distress or urgent message is received.
- Lower two LEDs (Green) blink when messages other than distress/urgent are received.

Key	Function
DISTRESS	Open cover on this key and press the key 4 seconds continuously to transmit the distress alert.
ALARM STOP	Silences the receive alarm. Also, stops repetitive distress alerts.
CALL	Transmits messages other than distress.
POSITION 1	Ship s position and time are shown while pressed and held down.
AUTO ACK 2	Turns transceiver remote function and automatic transmission of acknowledge call (AUTO ACK) on or off (see page 3-6). Note that auto acknowledge function does not work when receiving distress alert.
TEST 3	Conducts diagnosis test. (Refer to page 3-29.)
PRINT 4	Printing. (This is also available for automatic setting of the printer.)
CONTRAST 5	Adjusts contrast of LCD in eight levels.
VOLUME 6	Adjusts volume of speaker in eight levels. (Distress and urgency alarms always sound at maximum volume.)
FILE 7	Retrieves files. (Refer to page 3-9.)
RCVD 8	Displays contents of received messages (Storage capacity: 100 files, 50 each of distress and other). (Refer to page 3-27.)
XMTD 9	Displays contents of transmitted messages (Storage capacity: 50 files). (Refer to page 3-27.)
SCAN 0	Starts and stops frequency scanning. (If SSB frequency is set to 2182 kHz, scan function is not operative.)
☼	Adjusts illumination of LCD, switches and keys in four levels.
SELECT	• Displays Set up menu (Main menu). • Changes settings of items appearing with blinking question mark.
CANCEL	Cancels wrong data and restores previous menu.

3.3 Basic Operation

1. Normal display screen

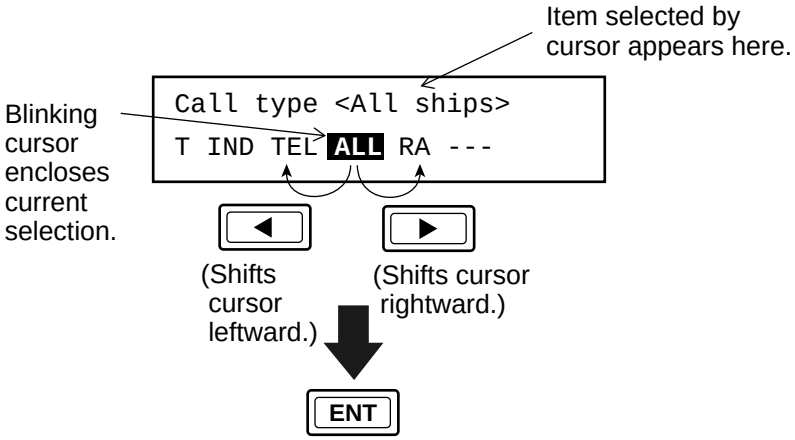
When turning on the DSC-6, the following display appears.



This is the “normal” display screen, where the DSC-6 is in stand-by status. You can return to this screen at any time (when lost in operation, for example) by pressing the CANCEL key several times.

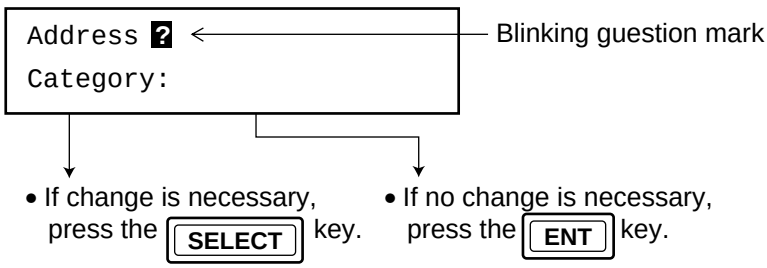
2. Selecting and registering items on the screen

Use the arrow keys ◀/▶ to select items. Press the ENT key to register selection.



3. The blinking question mark (?)

The blinking question mark prompts you to change or retain data currently shown on the screen. Press SELECT to change; ENT to retain.

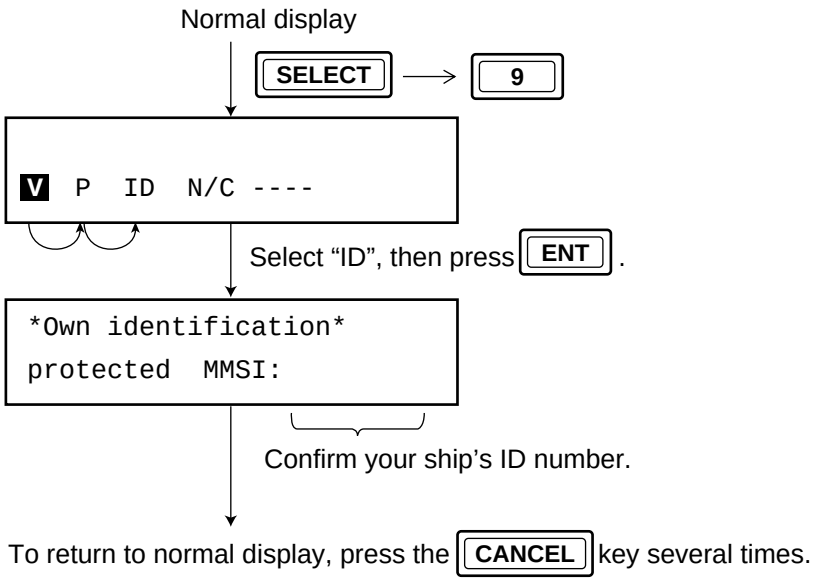


3.4 Confirming Settings Before Initial Communications

Before communicating with the DSC-6 for the very first time, check the following three items for correctness.

1. Your ship’s ID

Confirm that your ship’s ID has been entered correctly. If it is wrong, contact a FURUNO agent or dealer. Regulations do not permit change of ship's ID by radio operator.

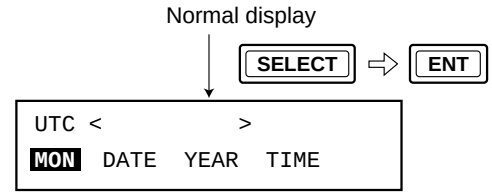


2. Position and time data

Position is automatically input by navigational equipment and time by the DSC-6’s internal clock.

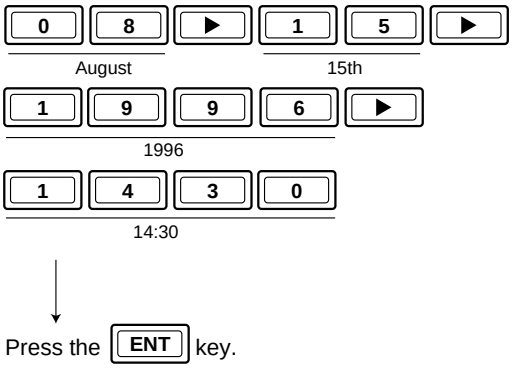
Press and hold down the 1 key to display position and time.

Note: The installer of the equipment sets the time. If it is wrong, follow the procedure shown at the top of the next page to enter correct time.



Enter month, day, year and time (UTC) in that order.

(Example) August 15, 1996, 14:30;



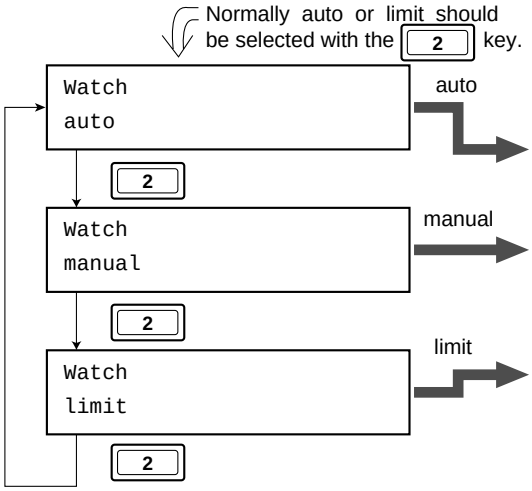
3. Automatic acknowledge and remote function

Automatic acknowledge

The automatic acknowledge function, turned on/off by the 2 key, automatically transmits the automatic acknowledge (AUTO ACK) signal to the transmitting station to acknowledge receipt of an individual call. If AUTO ACK function is on the SSB radiotelephone's remote control function goes on to automatically set itself with the working frequency and class of emission designated by the transmitting station.

Remote function

FURUNO's radio interface allows the DSC Terminal to control the SSB radiotelephone. When the remote control function is on the DSC Terminal sets the working frequency and class of emission on the SSB radiotelephone.



Automatic Acknowledge (For 1st.Call)	Remote Control Function	
	At transmission	At reception
ON	ON	ON
OFF	ON	OFF (Note 1)
OFF	ON	• When all ships call or call relative to distress is received: ON • When calls other than the above are received : OFF

Note 1: When All Ships call is received, press the 2 key to turn remote control function on. This causes working frequency to be automatically set on the SSB radiotelephone.

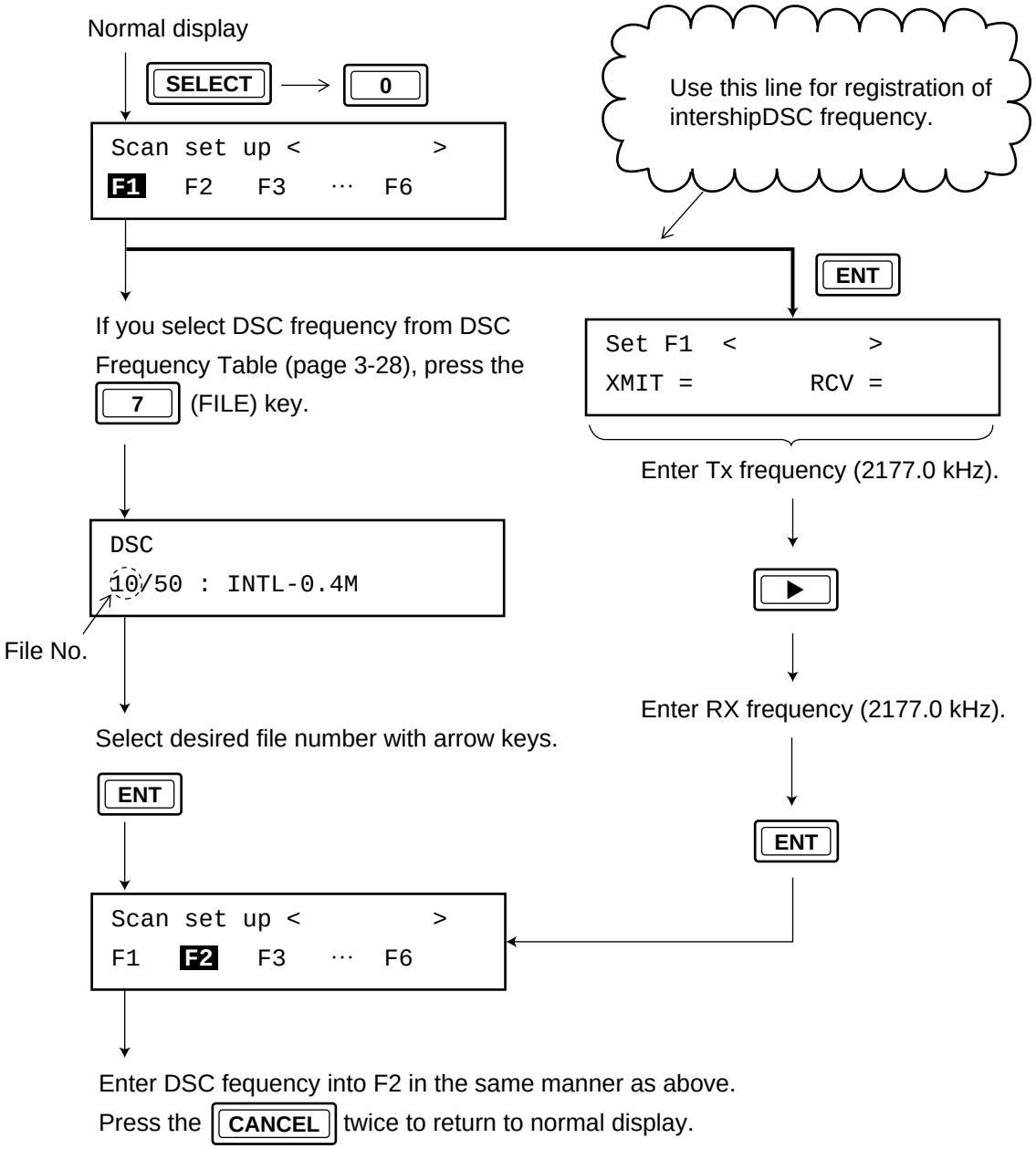
"Manual" setting

The manual setting provided by the [2] key prevents interruption by a third party when conducting voice urgent or safety communications over a FURUNO SSB radiotelephone. Suppose that the [2] key is set for "auto" or "limit" and you receive a DSC safety call while conducting voice urgent communications. The DSC Terminal would then set the frequency used for the DSC safety call, thereby cancelling voice urgent communications.

Registering DSC scan frequencies

(Maximum six general DSC frequencies programmable)

DSC scan frequencies should be registered to transmit the acknowledge back signal, in response to an individual call, to the transmitting station, over the appropriate frequency pair. Therefore, register both Tx and Rx DSC frequencies.

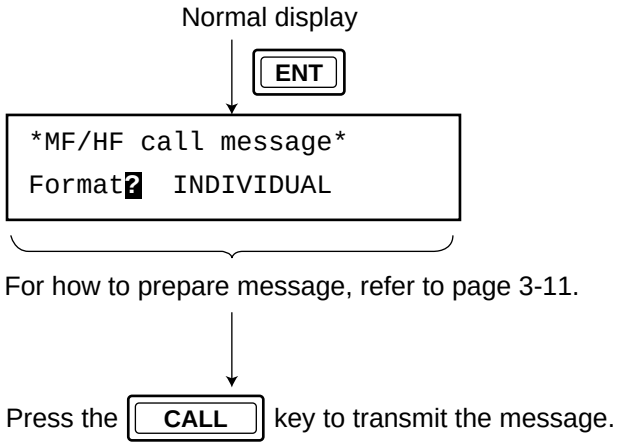


Note: Scan frequencies can be deleted by entering 99999.9 as the Rx frequency.

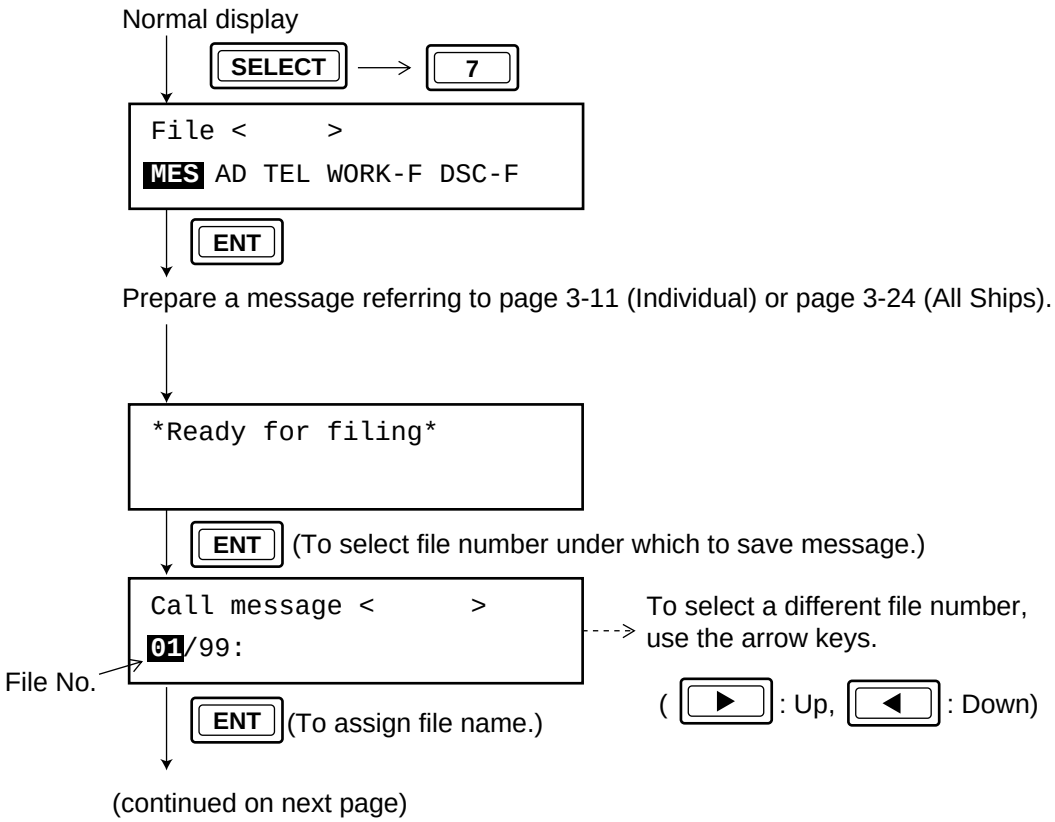
3.5 Preparing DSC Messages

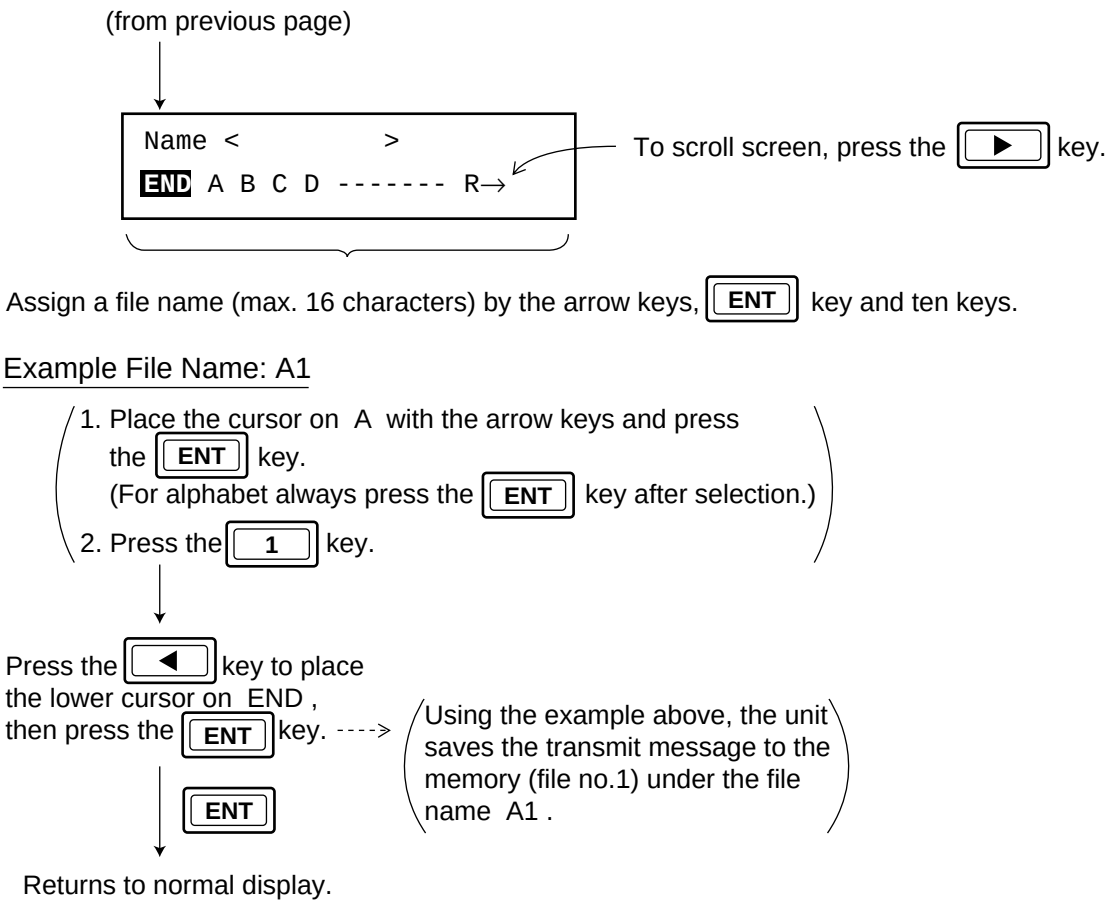
There are two ways in which a DSC message can be prepared. Preparation begins at the normal display.

1. Prepare message for immediate transmission



2. Transmitting message stored in memory (maximum 99 files)





(Reference) It is a good idea to record contents of file number registered as below.

(Example)

File No.	Station Name	DSC Freq.		Working Freq.	
		TX	RX	TX	RX
1 (Ind)	FURUNO	2177	2177		

Transmitting stored message

At the normal display screen press the 7 key (FILE) to retrieve file to transmit, enter file number and then press the CALL key.

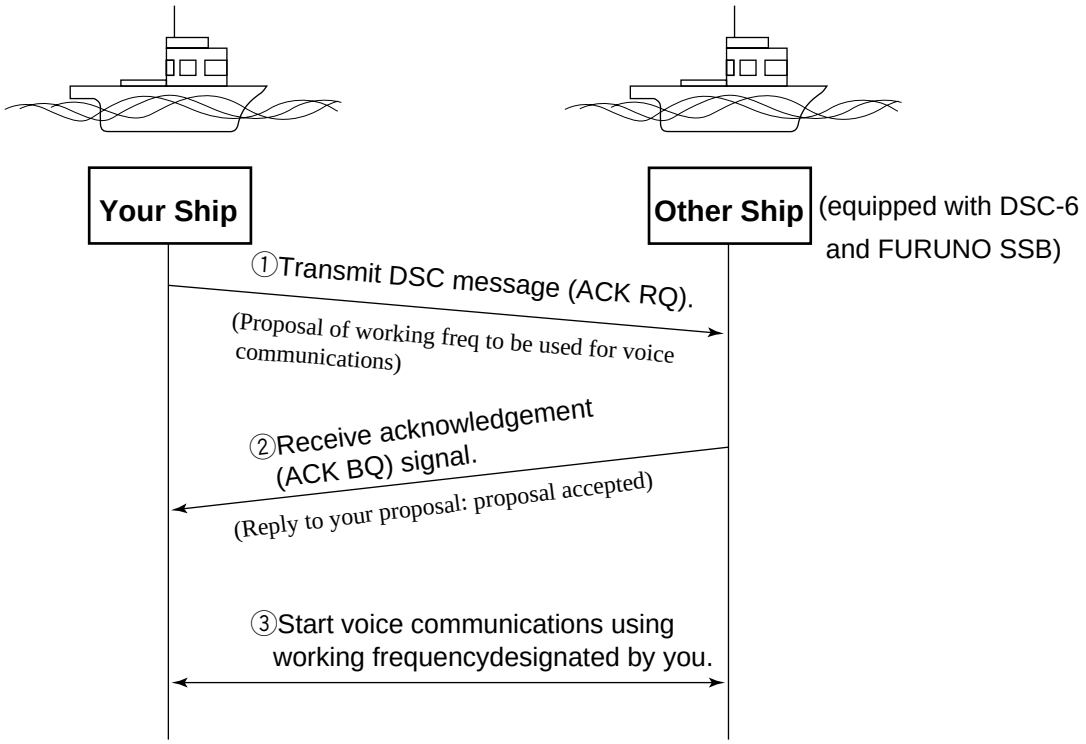
- 7 → (File No. : 1-99) → CALL

3.6 Transmitting/Receiving Individual Calls

(Actual Communications)

This section shows you how to transmit and receive individual calls (test calls). To transmit an individual call you will need to know the ID number of the ship (9 digit) for whom the call is intended.

1. Transmitting individual call



Suppose a receiving station carries the DSC-6 and a FURUNO SSB radiotelephone. Then, to transmit and receive individual calls, the receiving station and transmitting station must register DSC frequencies in the scan memory of their DSC-6.

To start intership communications, the receiving station programs DSC frequency assigned to intership call, for instance, 2177 kHz (Tx and Rx same) in the scan memory.

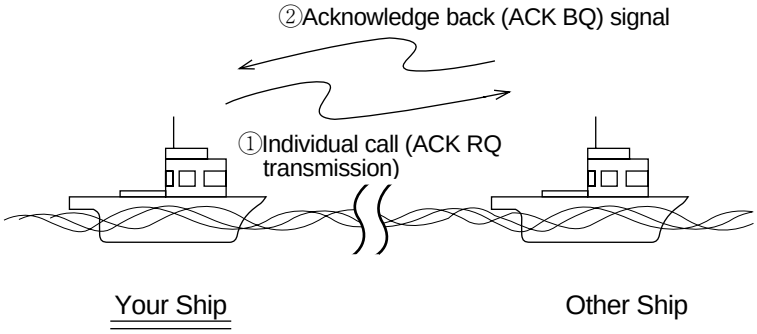
Preparation at receiving station

1. Register 2177 kHz in the scan memory as shown on page 3-7. (maximum six frequencies programmable, if necessary.)
2. Press the [0] key on the DSC-6. The SSB radiotelephone starts scanning general DSC frequencies.
3. Press the [2] key to show “auto” on the screen, to turn on the automatic acknowledge (AUTO ACK) function.

(1) Preparation and transmission of individual call message by you

A Tx individual call message contains the acknowledge request (ACK RQ) signal, which requests the receiving station to acknowledge receipt of the message by the acknowledge back (ACK BQ) signal. While awaiting the ACK BQ signal, your SSB radiotelephone is inoperative.

Before transmitting an individual call be sure the frequency set on the SSB radiotelephone is other than 2182 kHz, otherwise the DSC message can not be transmitted.

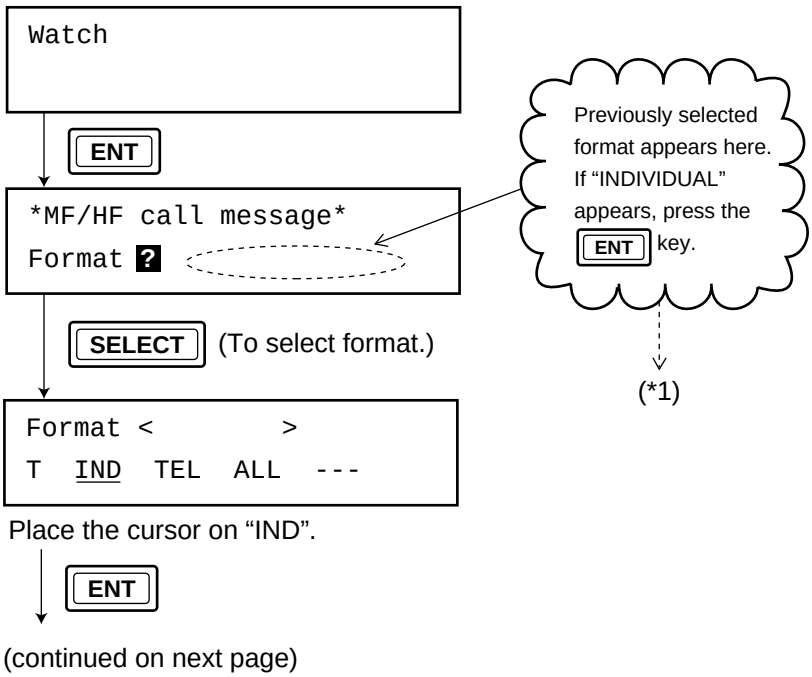


Basic procedure

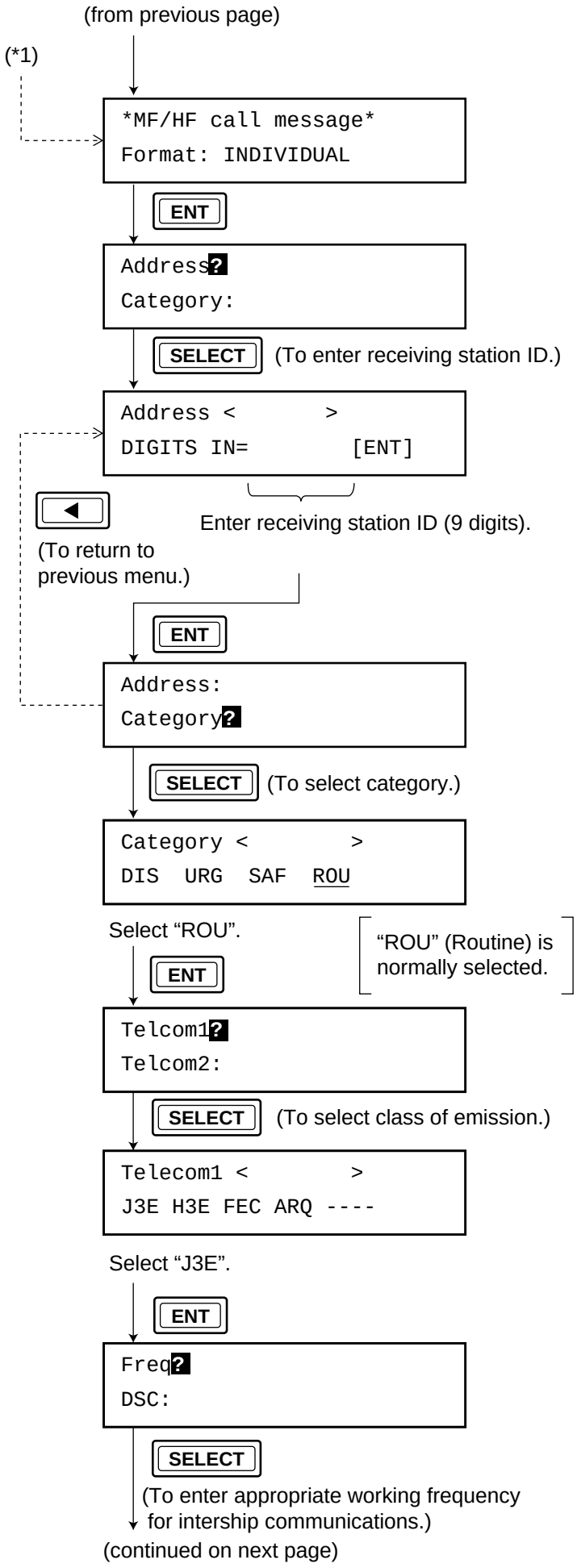
The basic procedure for preparing an individual call message is as follows:

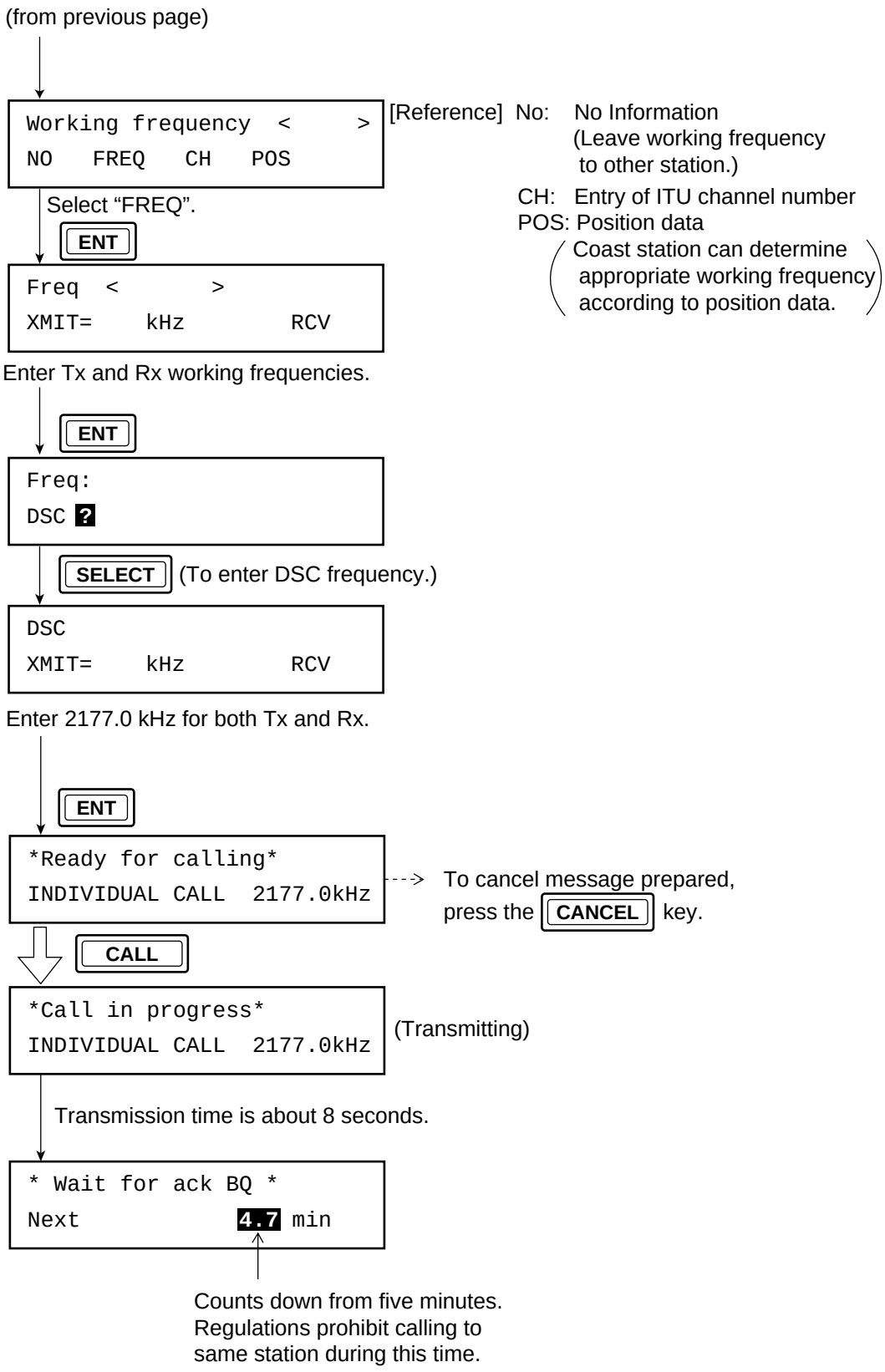
1) Selection of format specifier (calling type)
2) Entry of receiving station's ID
3) Selection of category (communications priority)
4) Selection of class of emission
5) Entry of working frequency to be used for voice communications
6) Entry of DSC frequency to be used for transmission of these messages

Detailed procedure



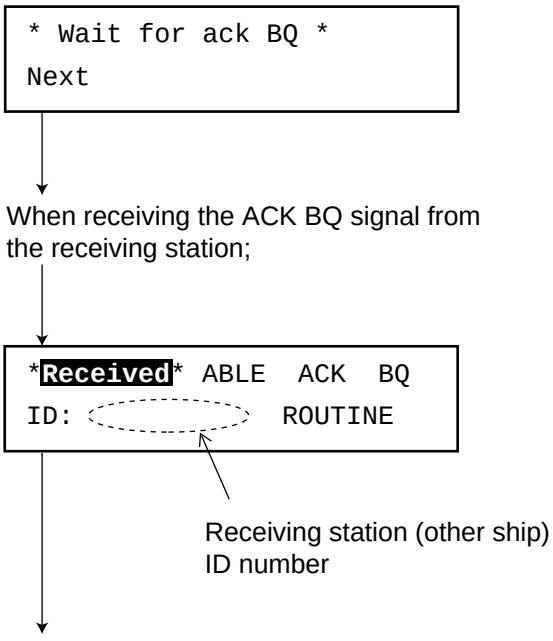
(continued on next page)


(from previous page)
(*1)
MF/HF call message
Format: INDIVIDUAL
ENT
Address?
Category:
SELECT
(To enter receiving station ID.)
Address < >
DIGITS IN= [ENT]
Enter receiving station ID (9 digits).
(To return to previous menu.)
ENT
Address:
Category?
SELECT
(To select category.)
Category < >
DIS URG SAF ROU
Select “ROU”.
“ROU” (Routine) is normally selected.
ENT
Telcom1?
Telcom2:
SELECT
(To select class of emission.)
Telecom1 < >
J3E H3E FEC ARQ ----
Select “J3E”.
ENT
Freq?
DSC:
SELECT
(To enter appropriate working frequency for intership communications.)
(continued on next page)



Then, receive the ACK BQ signal from receiving station.

(2) Receiving ACK BQ signal from receiving station



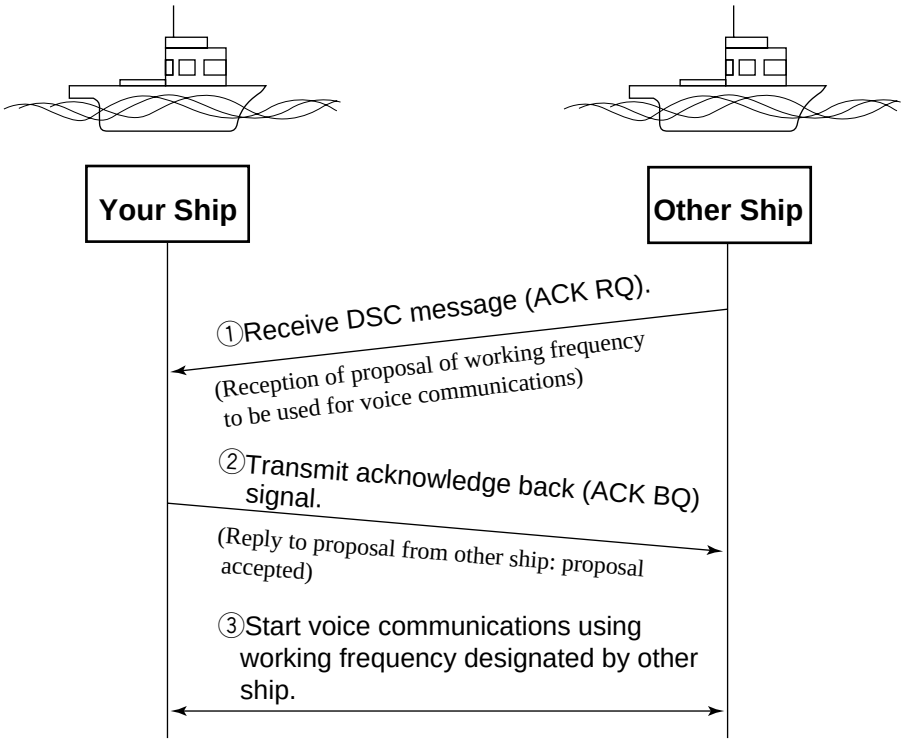
If you want to view contents of receive message, press the **ENT** key successively.

(If no confirmation of receive message is necessary, press the **CANCEL** key several times.)

Returns to normal display.

2. Receiving individual call

This paragraph explains how to receive an individual call.



Preparation at your ship

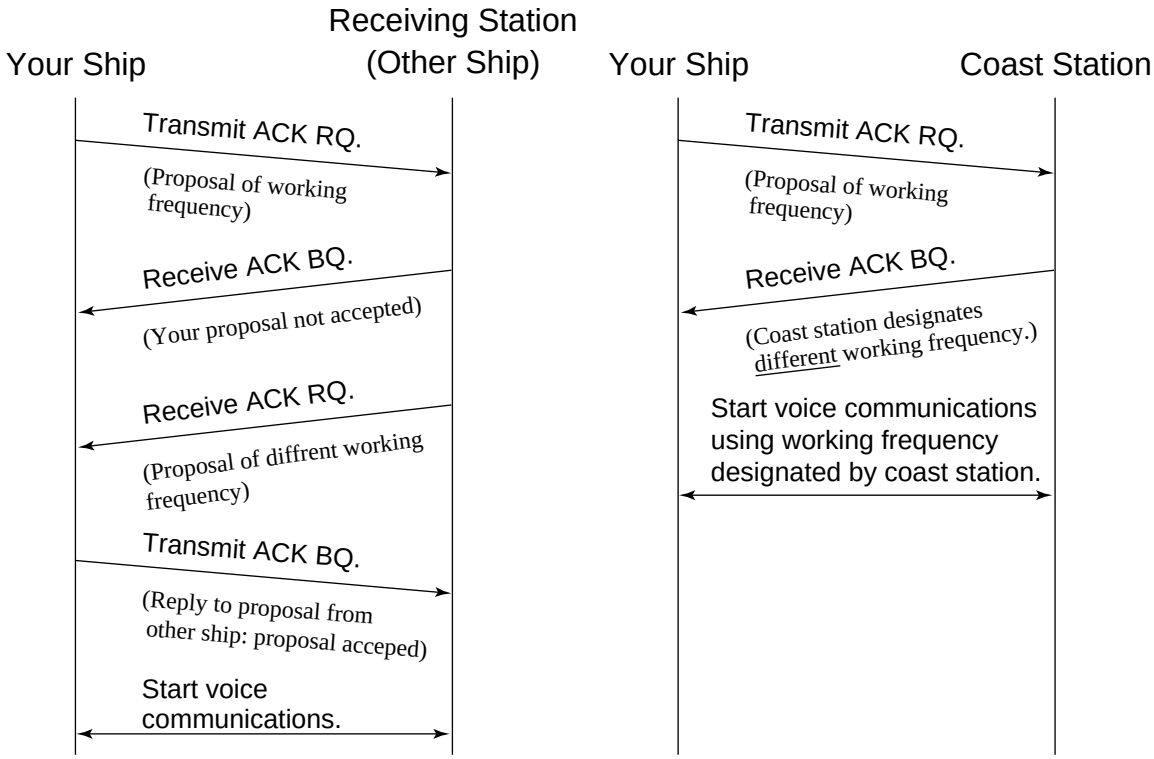
1. Register intership DSC frequency 2177 kHz (Tx and Rx same) in the scan memory as shown on page 3-7. (maximum six frequencies programmable, if necessary.)
2. Press the [0] key on the DSC-6. The SSB radiotelephone starts scanning general DSC frequencies.
3. Press the [2] key to show "auto" on the screen, to turn on the automatic acknowledge (AUTO ACK) function.

When you receive an individual call over DSC frequency 2177 kHz, your DSC-6 will automatically acknowledge the call and then you can begin voice communications with the transmitting station (other ship).

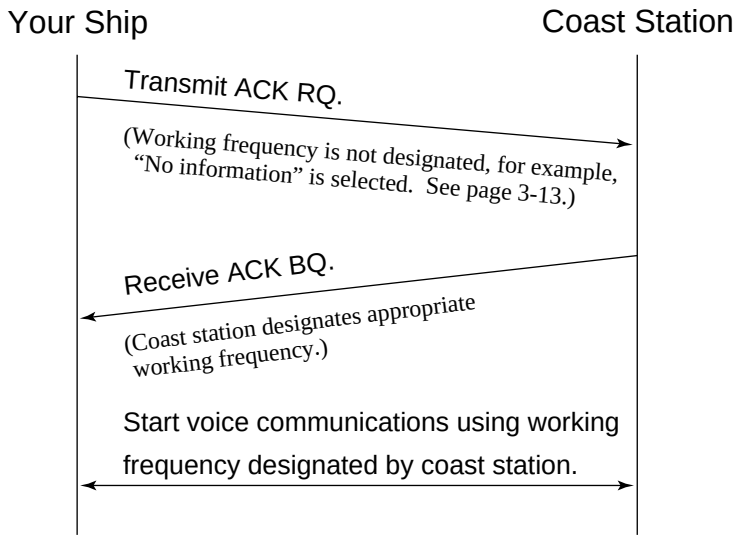
Note: If automatic acknowledge is set to "limit" or "manual" when receiving an individual call, press the [ENT] key successively to view contents of the message. Then, press the [CALL] key to transmit the acknowledge back (ACK BQ) signal.

Examples of signal exchange for individual call

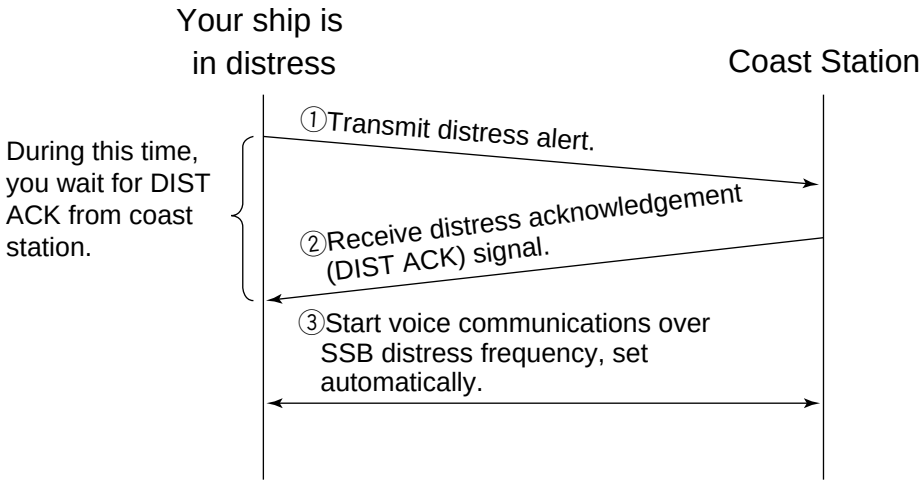
Example 1: Your ship transmits an individual call to a station but the station does not agree with your proposals.



Example 2: Your ship transmits an individual call to a specific coast station without proposal of working frequency. (“No information” is selected.)



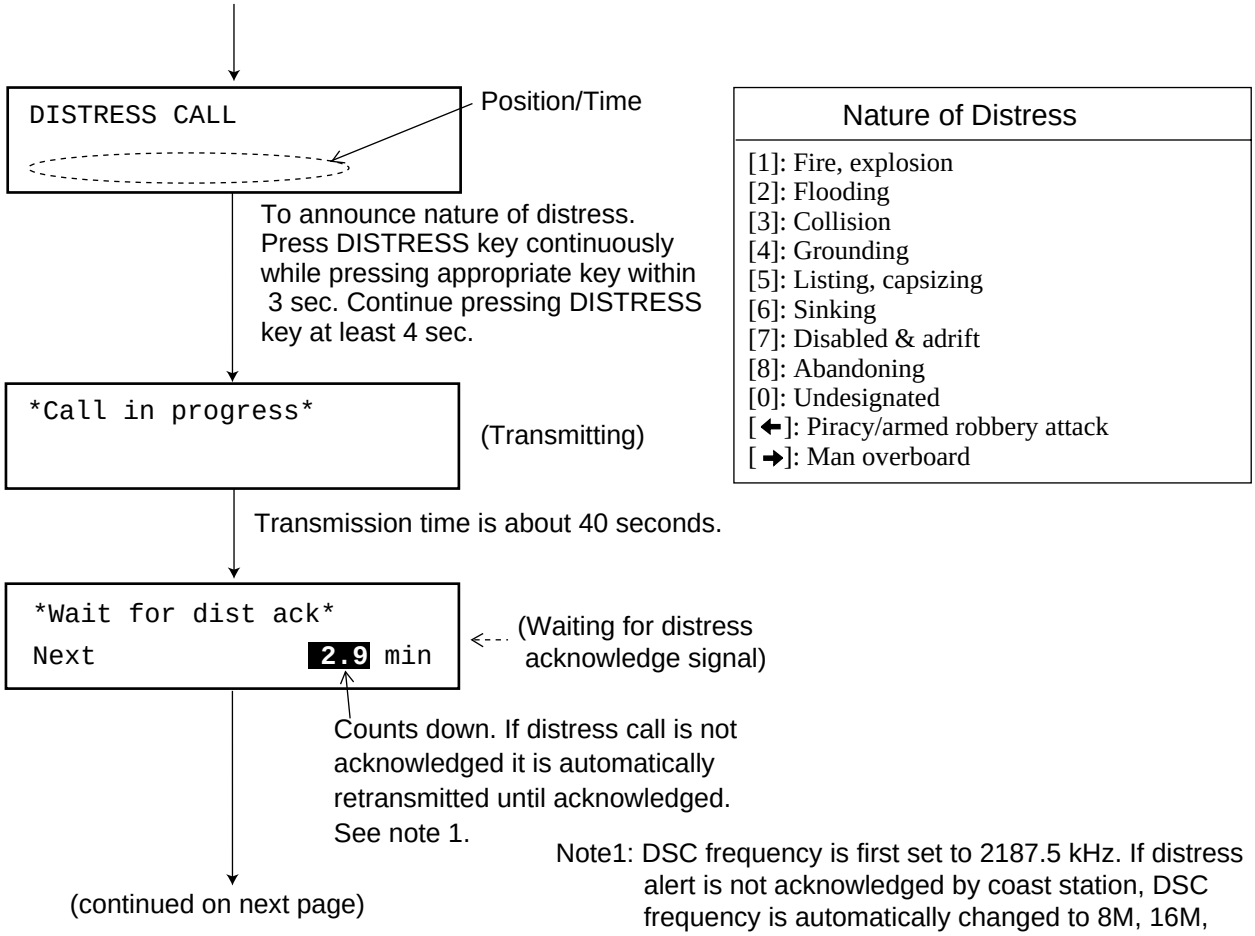
3.7 Distress Communications



Procedure

(1) Transmitting distress alert

Open cover on DISTRESS key and press the key 4 seconds continuously.

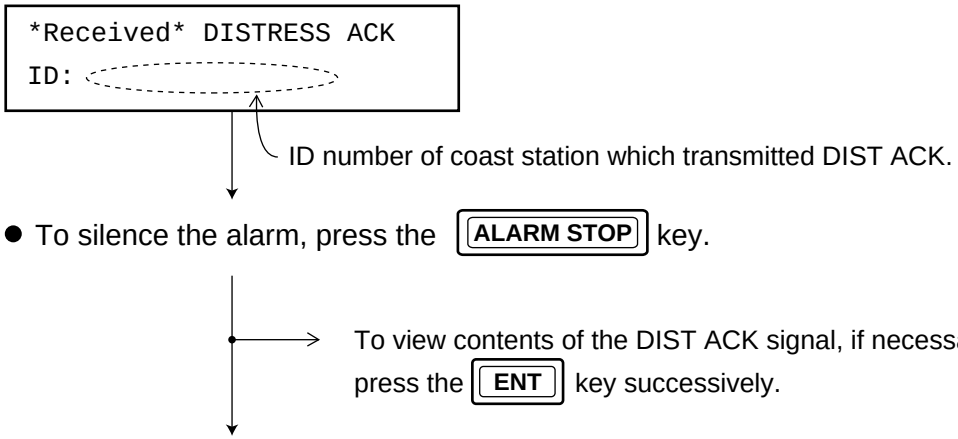


Nature of Distress
[1]: Fire, explosion
[2]: Flooding
[3]: Collision
[4]: Grounding
[5]: Listing, capsizing
[6]: Sinking
[7]: Disabled & adrift
[8]: Abandoning
[0]: Undesignated
[←]: Piracy/armed robbery attack
[→]: Man overboard

Note1: DSC frequency is first set to 2187.5 kHz. If distress alert is not acknowledged by coast station, DSC frequency is automatically changed to 8M, 16M, 4M in that order to retransmit the alert, until acknowledged.

(from previous page)

(2) Receiving distress acknowledge (DIST ACK) signal



- To silence the alarm, press the **ALARM STOP** key.

To view contents of the DIST ACK signal, if necessary, press the **ENT** key successively.

(3) Commencing distress communications by voice

After reception of the DIST ACK signal, commence distress communications by radiotelephone since SSB distress frequency is automatically selected. For details of distress voice communications, refer to page 2-2 or 2-9.

(Reference)

DSC	SSB Radiotelephone	DP-5 (Telex)
2187.5	2182	2174.5
4207.5	4125	4177.5
6312	6215	6268
8414.5	8291	8376.5
12577	12290	12520
16804.5	16420	16695

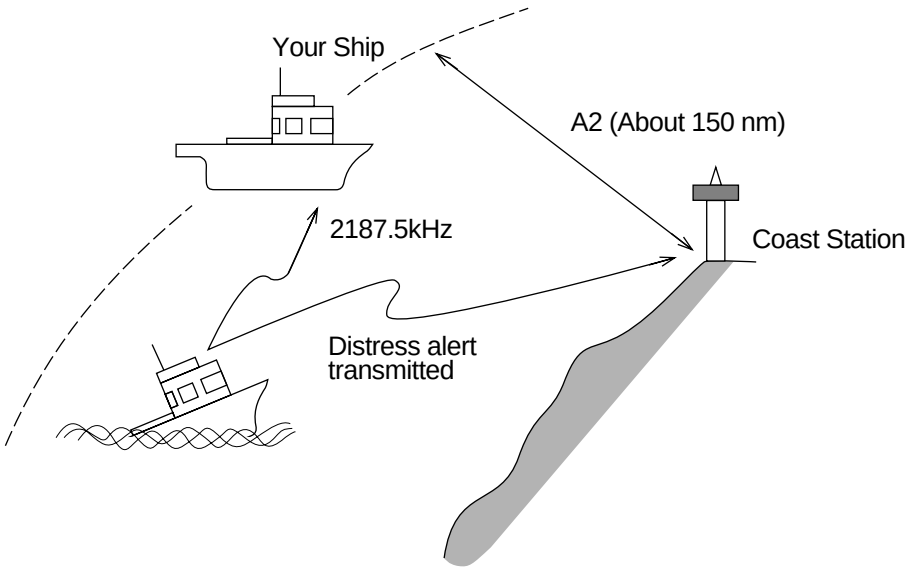
3.8 Receiving Distress Alert

1. Received distress alert over MF band

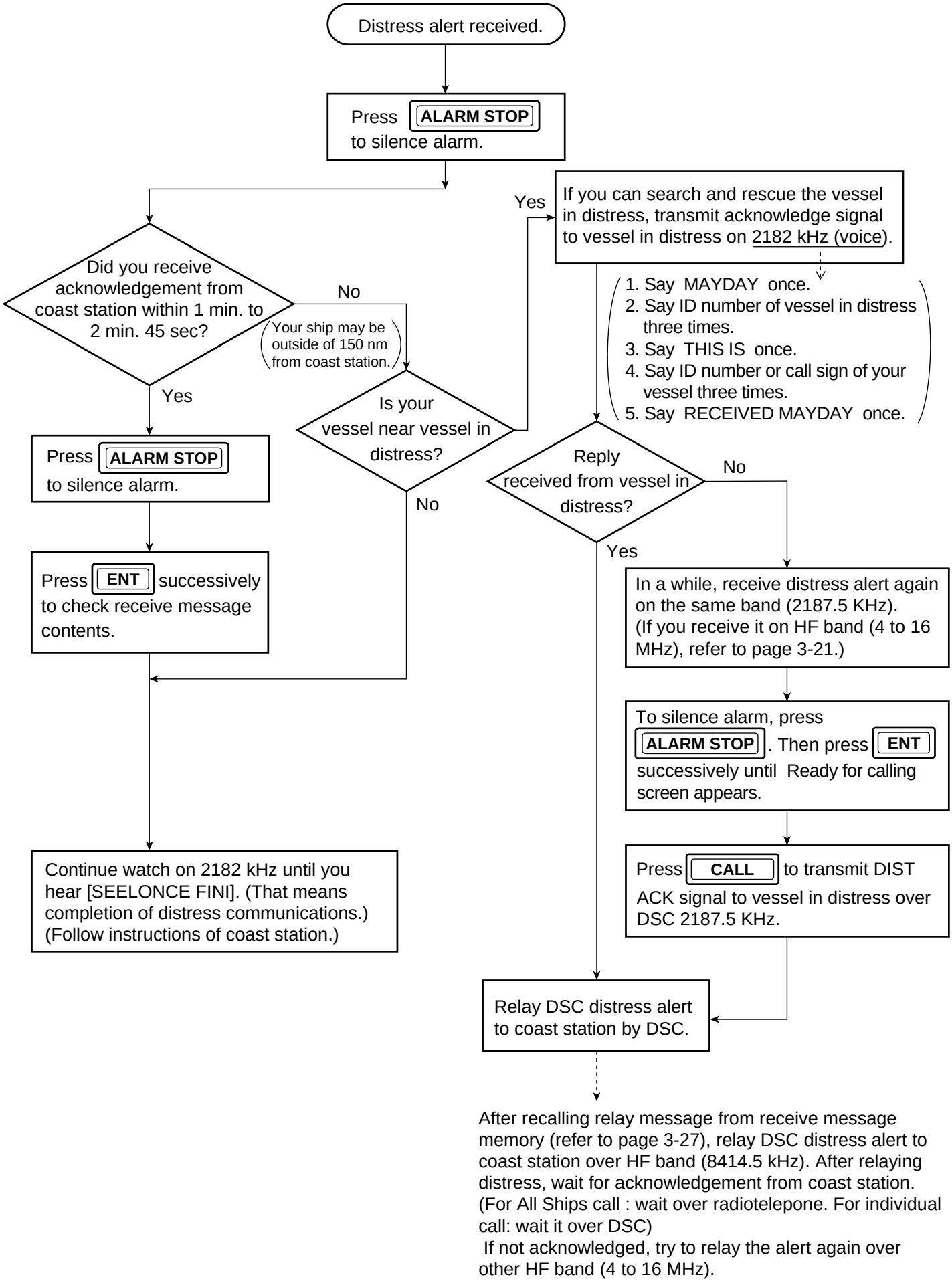
When the DSC-6 receives the distress alert the two red LEDs above the [ALARM STOP] key blink and the aural alarm sounds. Press the [ALARM STOP] key to silence the aural alarm and then wait up to three minutes to receive the distress acknowledge (DIST ACK) signal from a coast station. At this time the SSB radiotelephone automatically sets itself to watch on distress frequency 2182 kHz. --> You must watch distress acknowledge signal on both DSC and radiotelephone.

You should receive the DIST ACK signal from a coast station within three minutes. Be prepared to follow the instructions of the coast station. If you do not receive the DIST ACK signal within three minutes, follow the flow chart on the next page to determine what you should do.

It may be necessary for your ship to transmit the DIST ACK to the vessel in distress. If you do transmit the DIST ACK signal, **you must relay the distress alert to a coast station and begin search and rescue operations for the vessel in distress.**



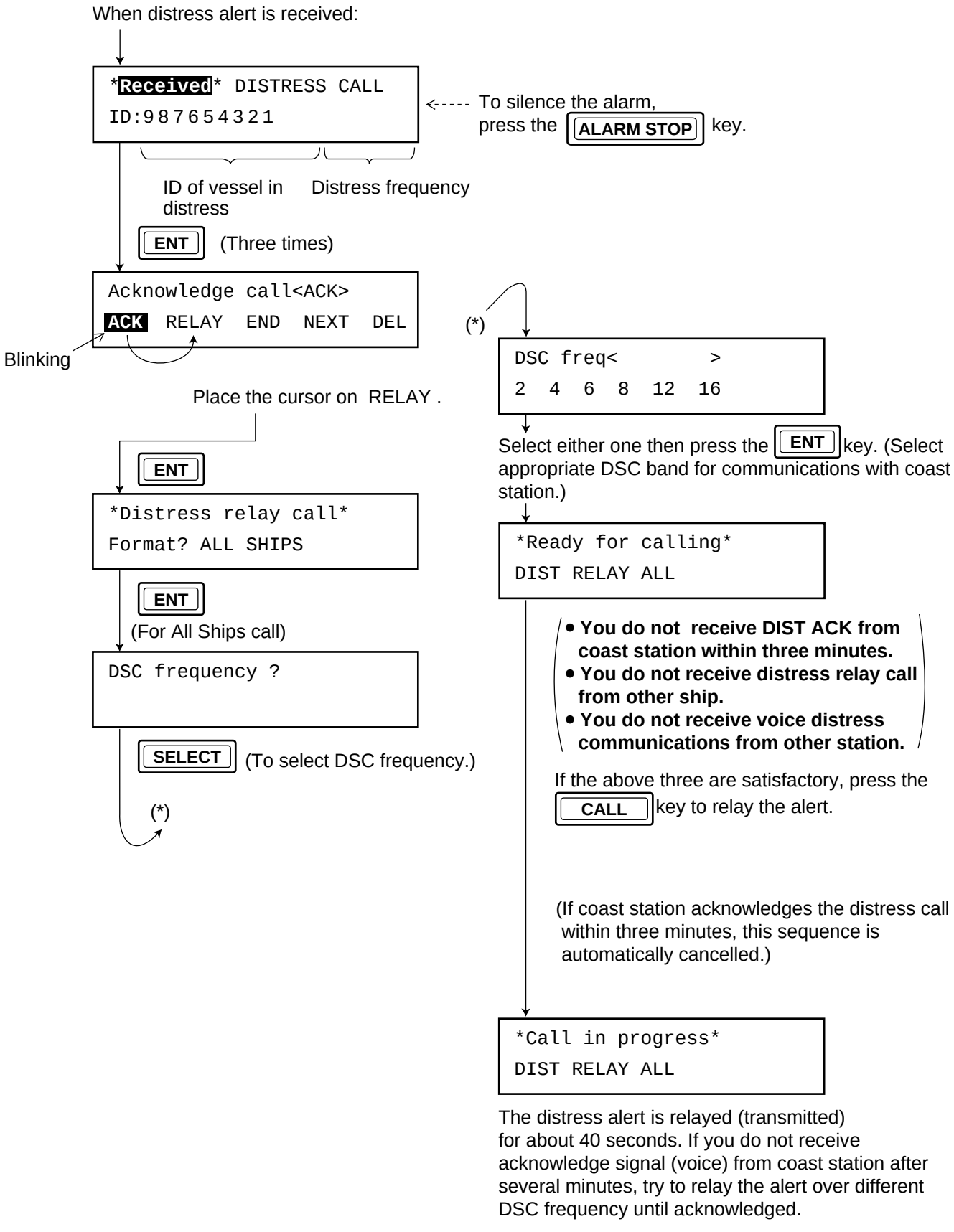
Flow chart (Should I transmit DIST ACK signal or not?)



After recalling relay message from receive message memory (refer to page 3-27), relay DSC distress alert to coast station over HF band (8414.5 kHz). After relaying distress, wait for acknowledgement from coast station. (For All Ships call : wait over radiotelepone. For individual call: wait it over DSC)
If not acknowledged, try to relay the alert again over other HF band (4 to 16 MHz).

2. Received distress alert over HF band

When the DSC-6 receives the distress alert the aural alarm sounds. Silence the alarm and then wait up to three minutes to receive the DIST ACK signal from a coast station. At this time the SSB radiotelephone automatically sets itself to watch on distress frequency 8291 kHz (8 MHz band). If you do not receive the DIST ACK from a coast station (over DSC or voice) within three minutes, press the [CALL] key to relay the distress alert to a coast station.

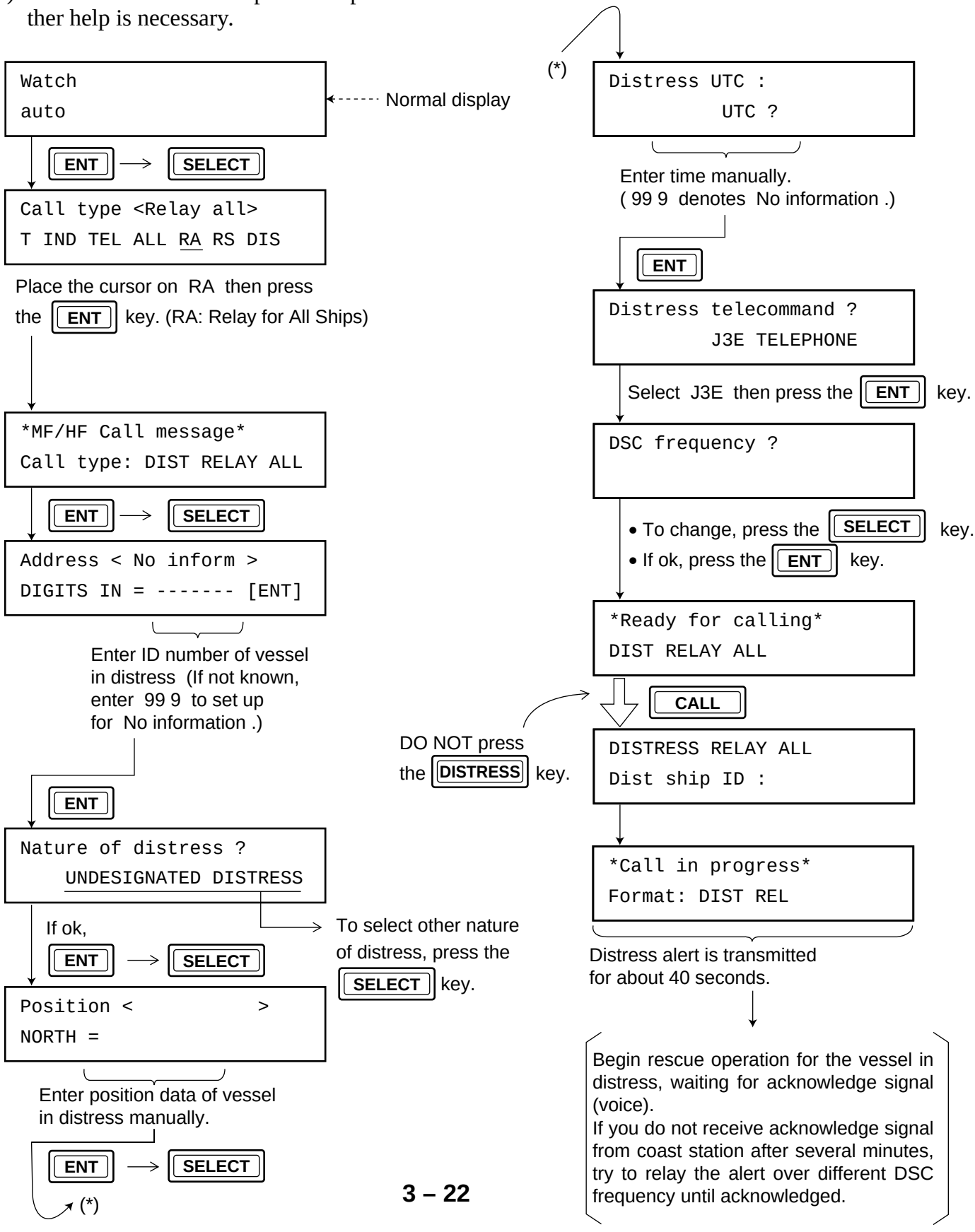


3.9 Relaying Distress Alert

You may relay the distress to a coast station on behalf of the vessel in distress in the following circumstances:

1) When your ship is near the vessel in distress and the vessel in distress cannot transmit the distress alert

2) When the master or the person responsible for the vessel not in distress considers that further help is necessary.

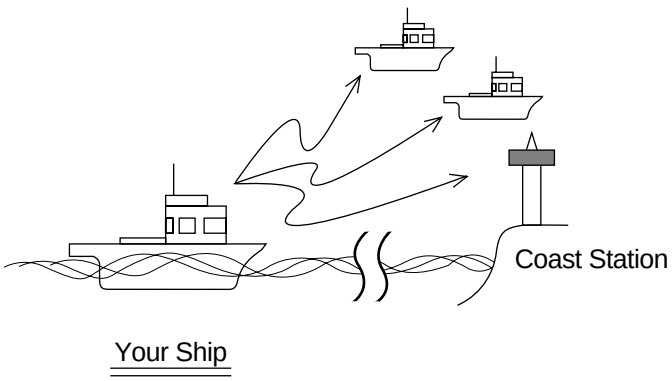


3.10 All Ships Call

(1) Transmitting All Ships call

Your ship can transmit an All Ships call to request assistance when an urgent event occurs onboard (for example, engine trouble or request for medical assistance such as infectious disease) or to transmit important navigational safety information to all stations including coast stations. Once the message is transmitted you can immediately begin voice communications over the SSB radiotelephone.

Before transmitting, make sure the frequency set on the SSB radiotelephone is other than 2182 kHz, otherwise you can not transmit the DSC message.



The basic procedure for transmitting All Ships call is as follows:

1) Selection of format specifier (calling type)

2) Selection of category (communications priority)

3) Selection of class of emission

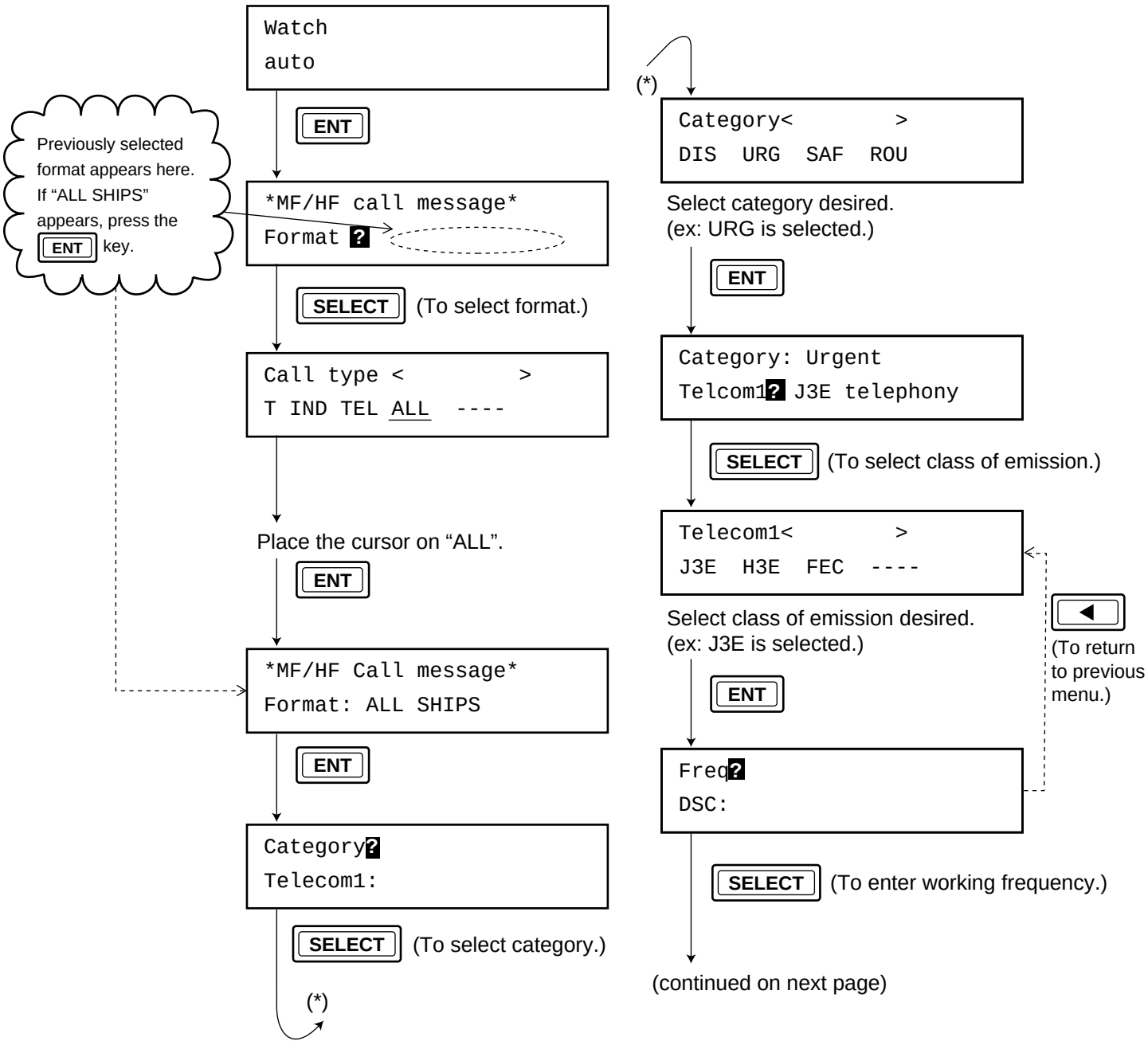
4) Entry of working frequency to be used for voice communications

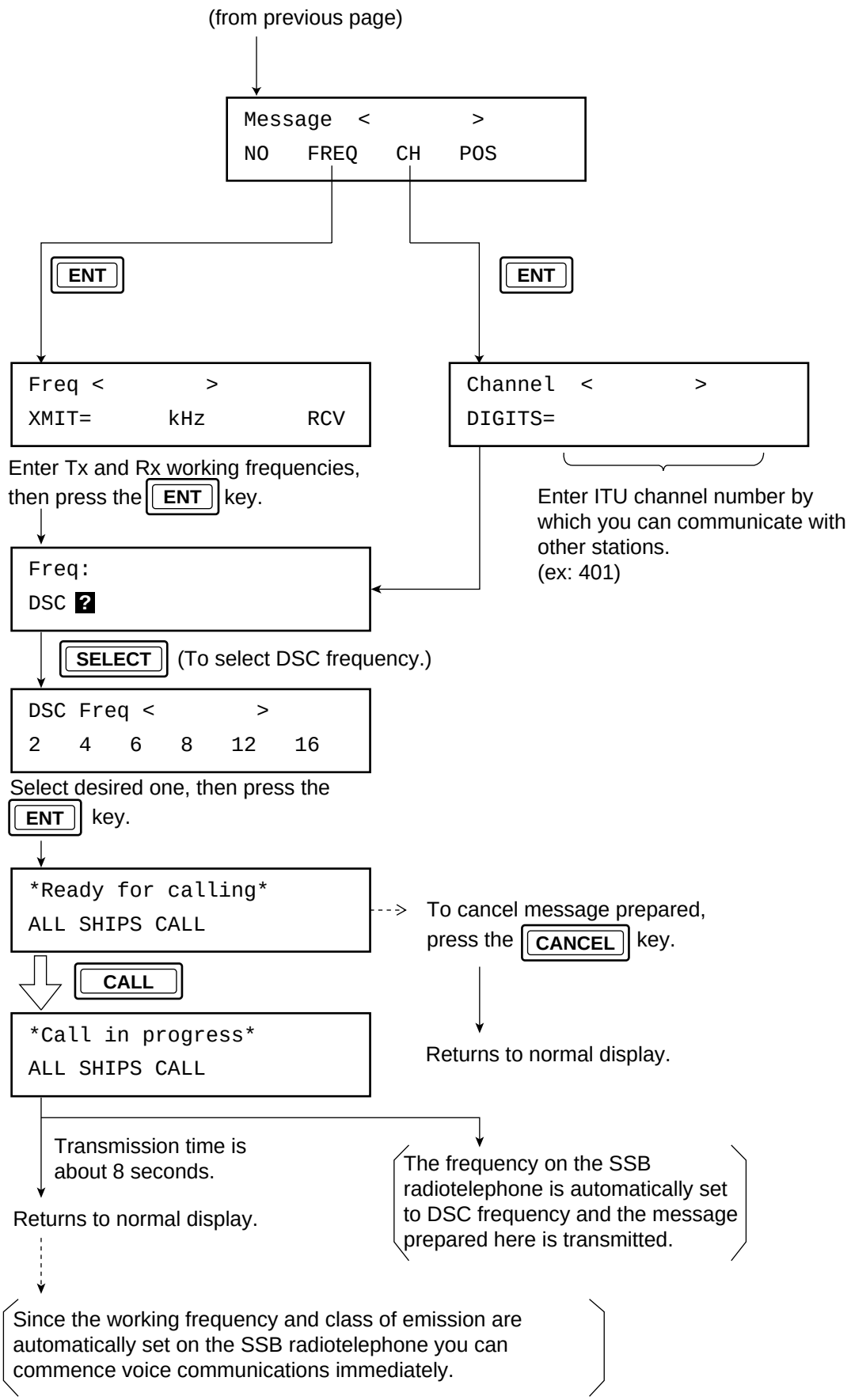
5) Entry of DSC frequency to be used for transmission of these messages

Then, press the CALL key to transmit the message.

Detailed procedure begins on the next page.

Detailed procedure

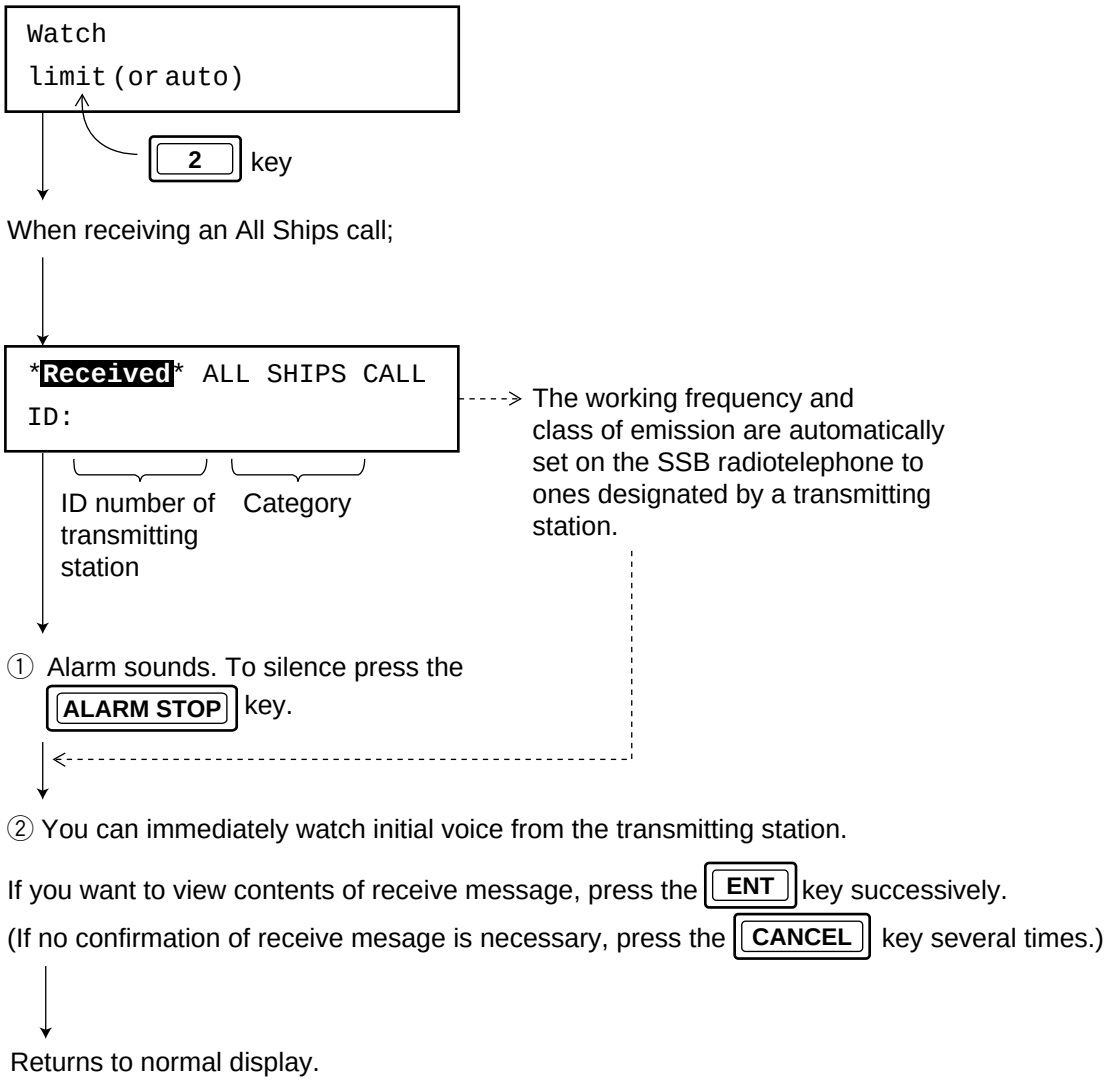



(from previous page)
Message < >
NO FREQ CH POS
ENT
ENT
Freq < >
XMIT= kHz RCV
Channel < >
DIGITS=
Enter Tx and Rx working frequencies, then press the ENT key.
Enter ITU channel number by which you can communicate with other stations. (ex: 401)
Freq:
DSC ?
SELECT (To select DSC frequency.)
DSC Freq < >
2 4 6 8 12 16
Select desired one, then press the ENT key.
Ready for calling
ALL SHIPS CALL
To cancel message prepared, press the CANCEL key.
CALL
Call in progress
ALL SHIPS CALL
Returns to normal display.
Transmission time is about 8 seconds.
Returns to normal display.
The frequency on the SSB radiotelephone is automatically set to DSC frequency and the message prepared here is transmitted.
Since the working frequency and class of emission are automatically set on the SSB radiotelephone you can commence voice communications immediately.

(2) Receiving All Ships call

Set the DSC-6's remote control function to "auto" or "limit" by the [2] key. This will turn on the remote control function when an All Ships call is received, to automatically set working frequency and class of emission specified by the transmitting station on the SSB radiotelephone, allowing you to watch initial voice from the transmitting station.

Note: All Ships call (urgent or safety call) is received by the AA-50 and it is then sent to the DSC-6.



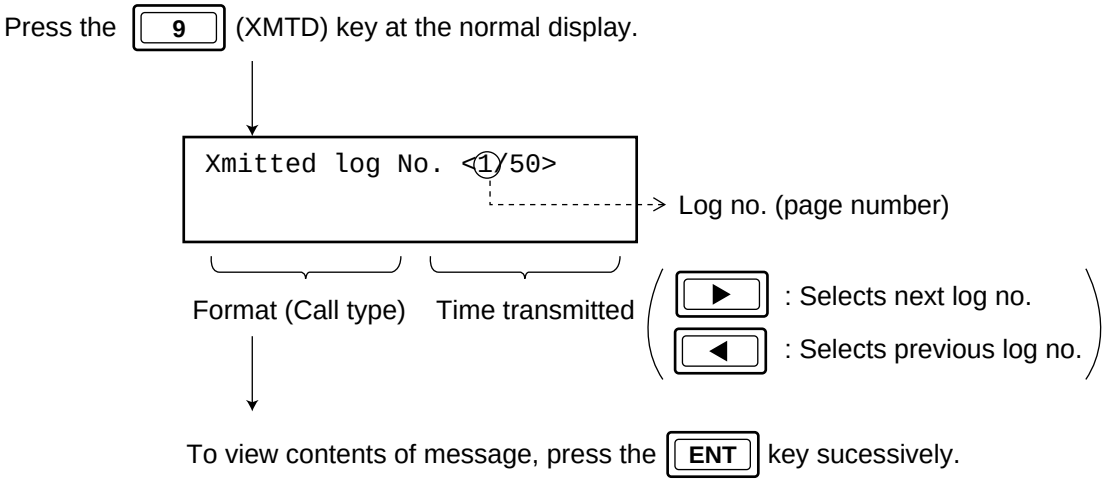
When the remote control function is off (set to "manual")

When the DSC-6's remote control function is set to "manual", press the [2] key at the moment that All Ships call is received. This will turn on the SSB radiotelephone's remote control function which automatically sets the working frequency and class of emission specified by the transmitting station. Then, quickly watch for voice communications from the transmitting station.

3.11 Transmit/Receive Message Memory

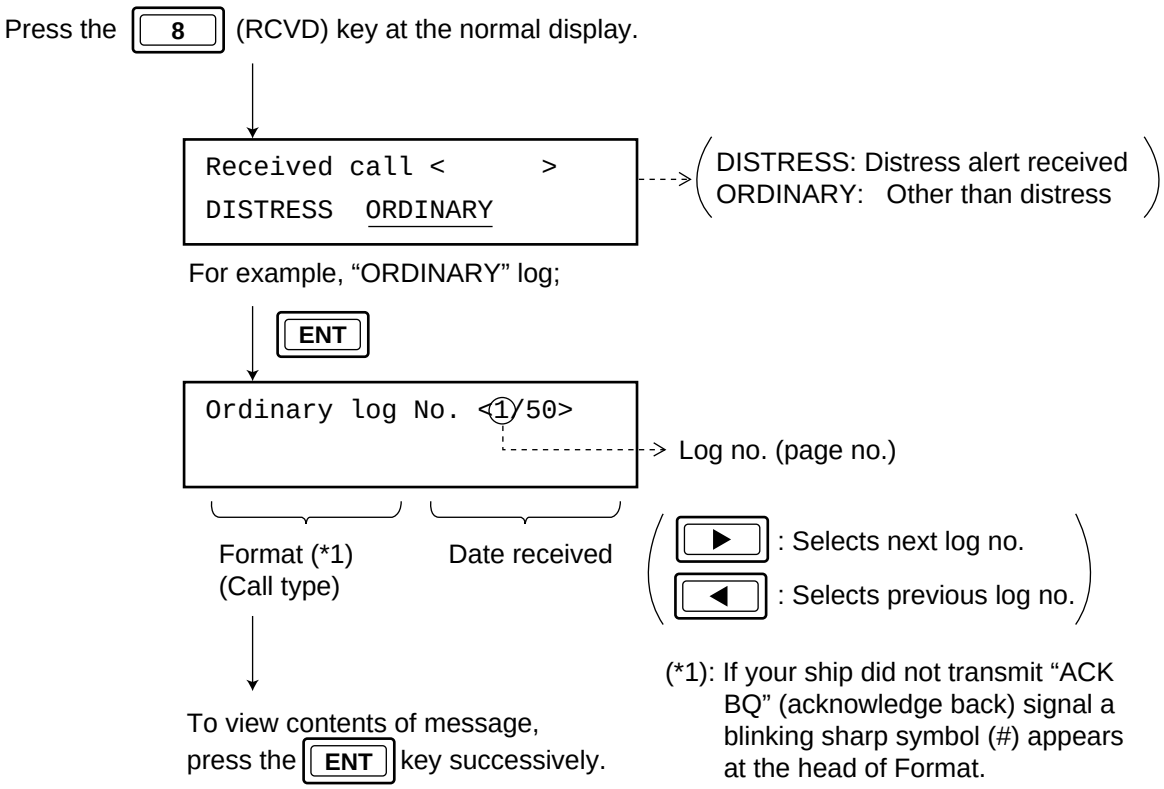
(1) Transmit message memory

The transmit message memory stores 50 transmit messages.



(2) Receive message memory

The receive message memory stores a total of 100 messages; 50 distress messages and 50 other types of messages.



3.12 DSC Frequency List

File No.	File Name	TX (kHz)	RX (kHz)	Remarks
		2187.5	2187.5	Distress/Safety Frequencies
		4207.5	4207.5	
		6312.0	6312.0	
		8414.5	8414.5	
		12577.0	12577.0	
		16804.5	16804.5	
10	INTL-0.4M	458.5	455.5	International Frequencies
11	INTL-2M	2189.5	2177.0	
12	INTL-4M	4208.0	4219.5	
13	INTL-6M	6312.5	6331.0	
14	INTL-8M	8415.0	8436.5	
15	INTL-12M	12577.5	12657.0	
16	INTL-16M	16805.0	16903.0	
17	INTL-18M	18898.5	19703.5	
18	INTL-22M	22374.5	22444.0	
19	INTL-25M	25208.5	26121.0	
22	LOCAL1-4M	4208.5	4220.0	Local Frequencies (Depending on countries)
23	LOCAL1-6M	6313.0	6331.5	
24	LOCAL1-8M	8415.5	8437.0	
25	LOCAL1-12M	12578.0	12657.5	
26	LOCAL1-16M	16805.5	16903.5	
27	LOCAL1-18M	18899.0	19704.0	
28	LOCAL1-22M	22375.0	22444.5	
29	LOCAL1-26M	25209.0	26121.5	
32	LOCAL2-4M	4209.0	4220.5	
33	LOCAL2-6M	6313.5	6332.0	
34	LOCAL2-8M	8416.0	8437.5	
35	LOCAL2-12M	12578.5	12658.0	
36	LOCAL2-16M	16806.0	16904.0	
37	LOCAL2-18M	18899.5	19704.5	
38	LOCAL2-22M	22375.5	22445.0	
39	LOCAL2-25M	25209.5	26122.0	

For scan programming

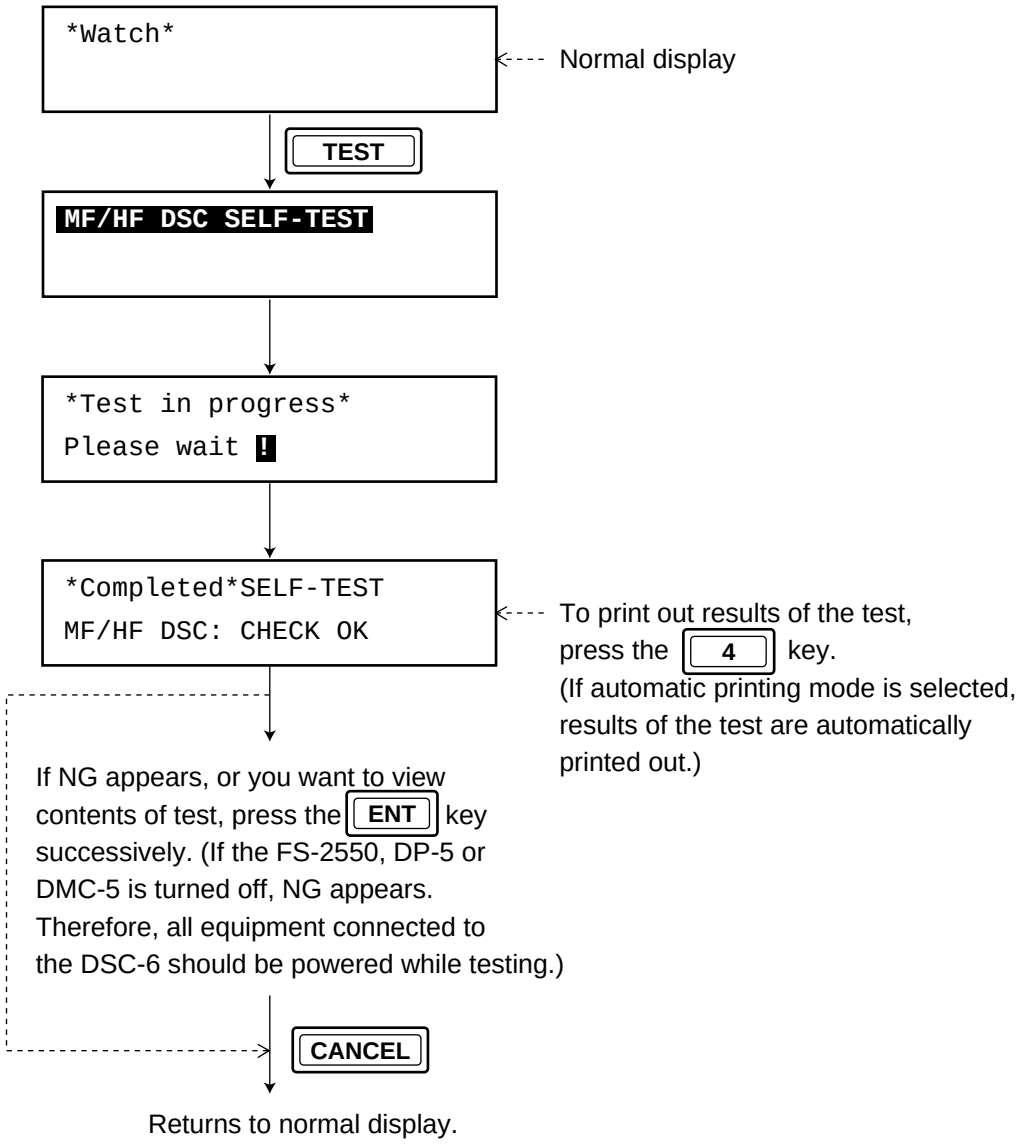
Note: For intership calling---- (Tx: 2177.0kHz, Rx:2177.0kHz)

(Reference) Distress and Safety Frequency List Among DSC/SSB/NBDP

DSC	SSB Radiotelephone	DP-5 (Telex)
2187.5	2182	2174.5
4207.5	4125	4177.5
6312	6215	6268
8414.5	8291	8376.5
12577	12290	12520
16804.5	16420	16695

3.13 Daily Check (Diagnosis Test)

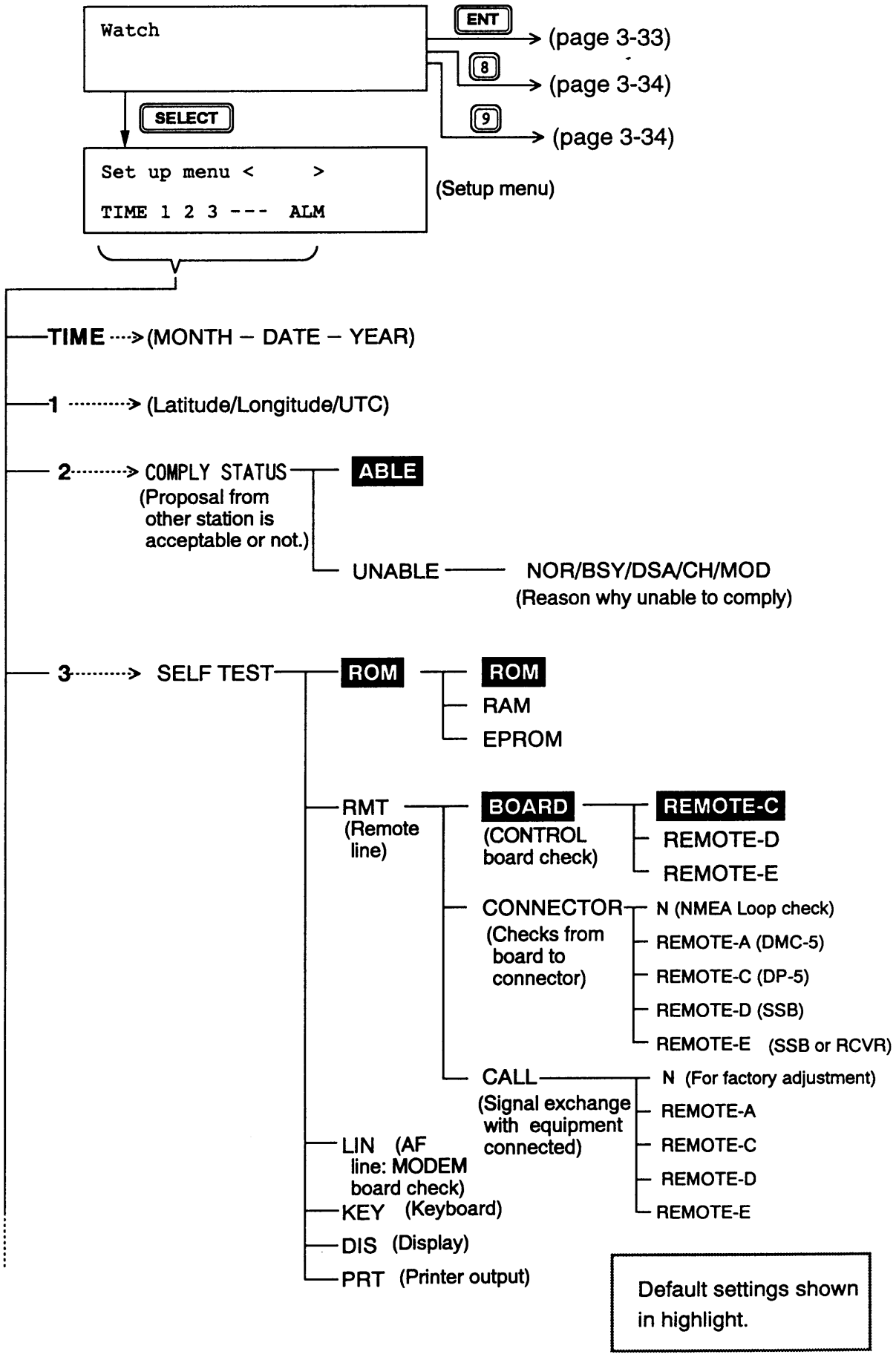
Regulations require daily testing of the equipment. Report any abnormality to superiors. Before starting the test, set the frequency on the SSB radiotelephone to other than 2182 kHz, otherwise the test results will show as NG (No Good).

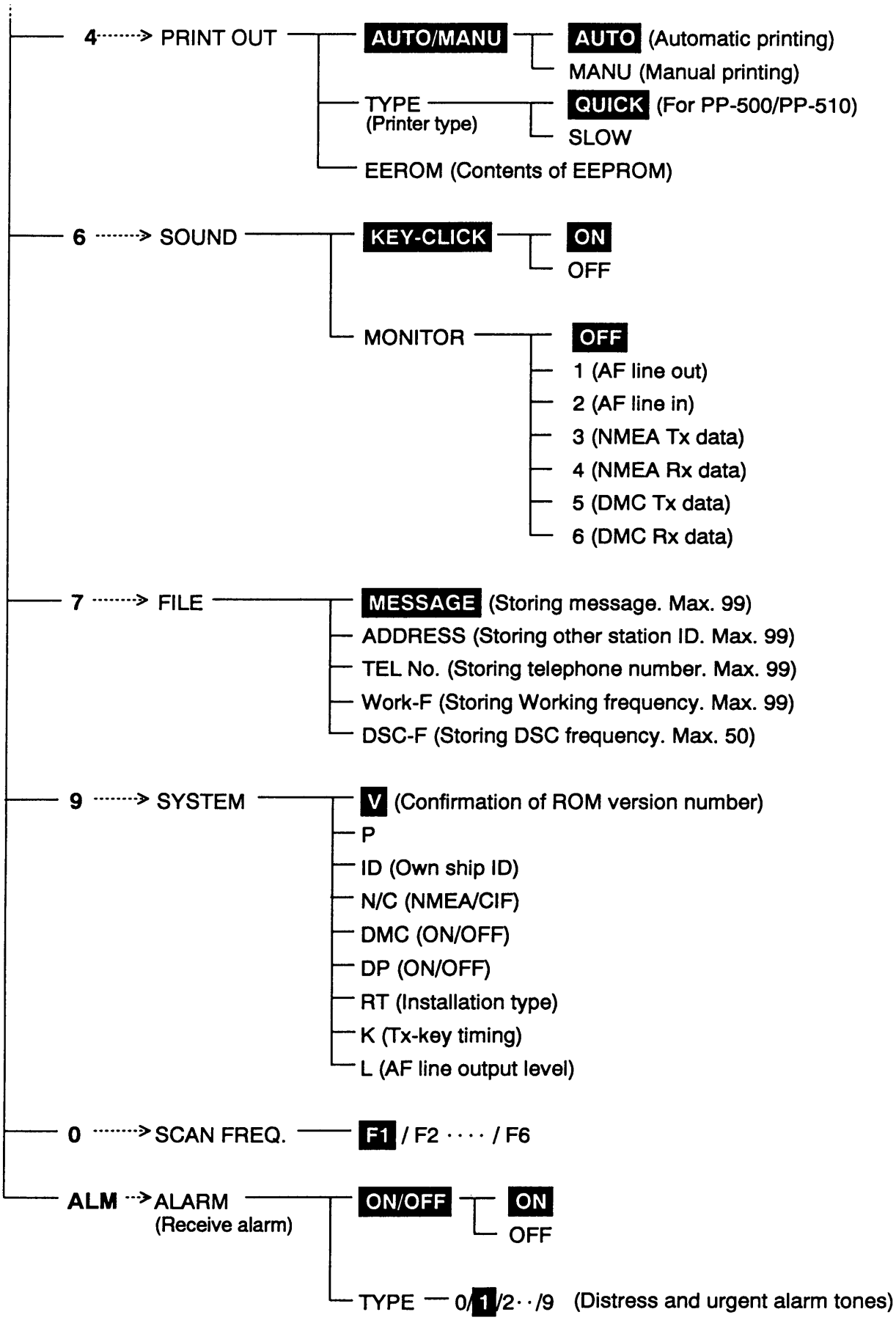


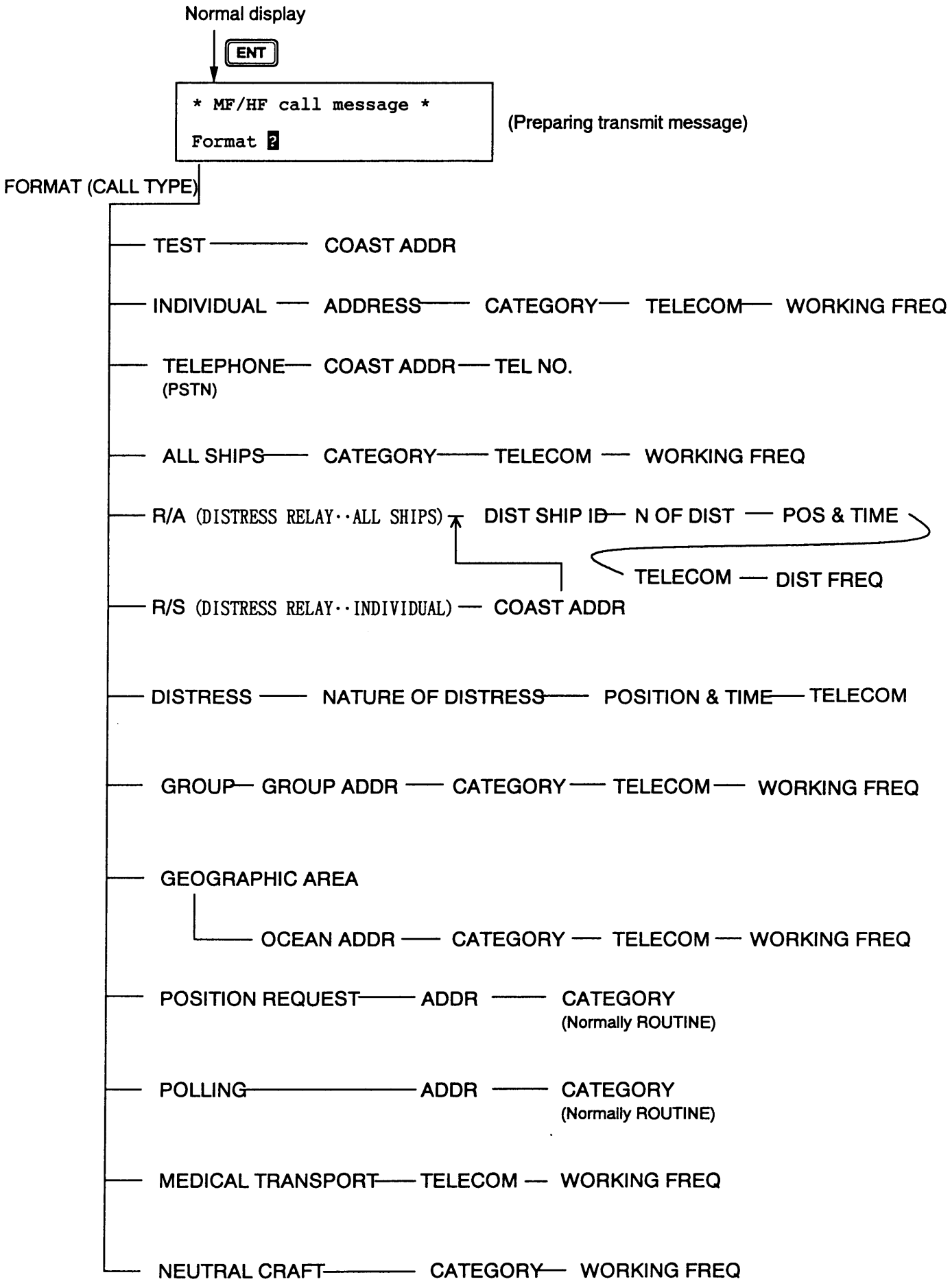
3.14 DSC Regulations

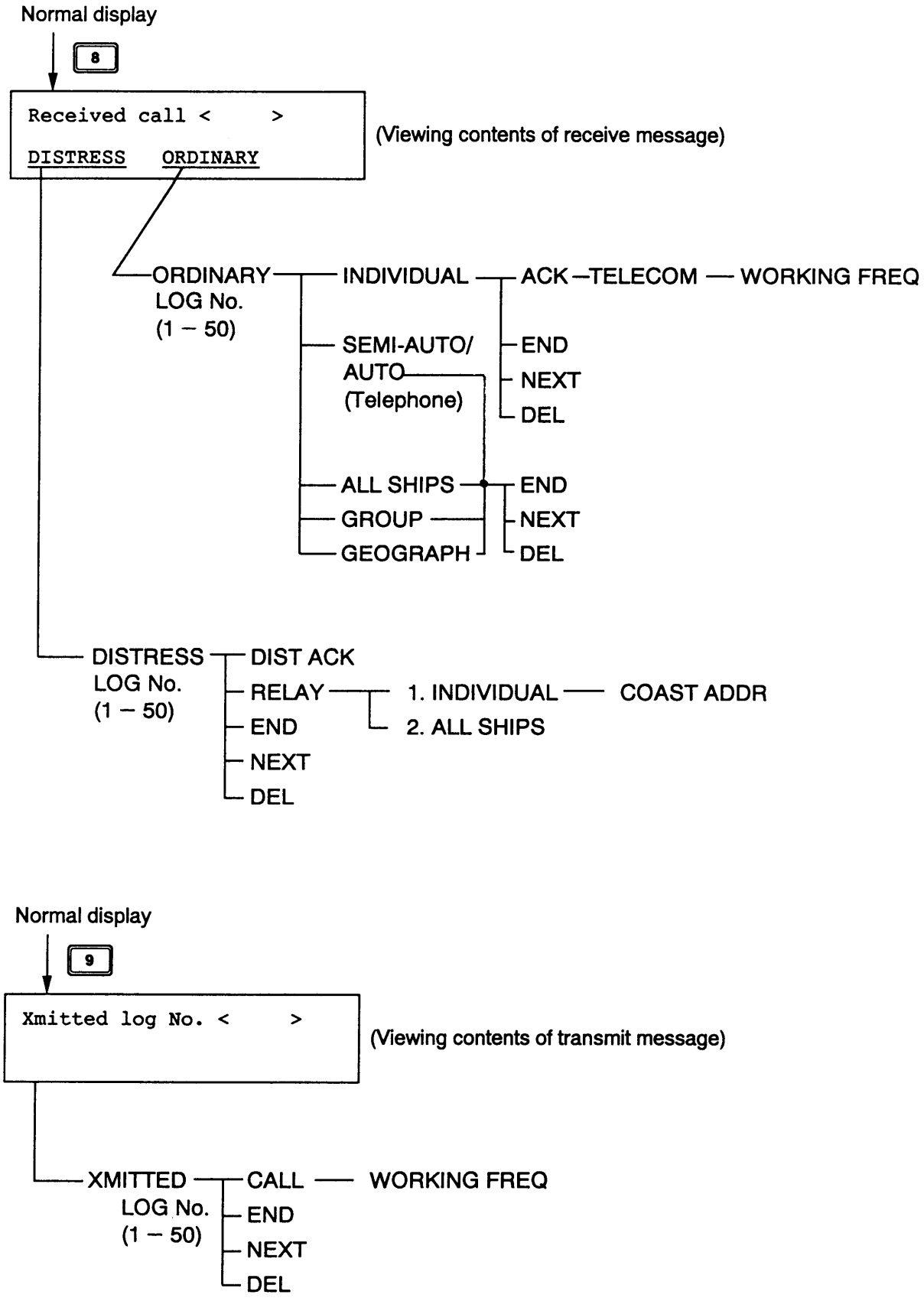
Item	Action initiated by:	Regulations
Initiation of acknowledgement of distress call transmitted on MF or HF band.	Coast	With delay of 1 min to 2 3/4 min (2 min 45 sec) after receipt of distress call.
Initiation of acknowledgement of distress call transmitted on MF or HF band.	Ship	Wait 3 min for distress acknowledge (DIST ACK) signal from coast station. Refer to page 3-20. ↓ 3 minutes later • First: by radiotelephone • Second: by DSC (If acknowledgement by radiotelephone is unsuccessful, use DSC.)
Retransmission (Repetition) of distress alert (until acknowledged).	Ship	At a random delay between 3 1/2 and 4 1/2 min from the first distress call. Refer to page 3-17.
Distress relay call on HF band	Ship	Wait 3 min for distress acknowledge (DIST ACK) signal from coast station. If no acknowledgement is received within 3 min, no disteress relay call from other ship is received and no voice distress communications from other station is received, transmit a distress relay call to the appopriate coast station. Refer to page 3-21.
Retransmission of Individual Call.	Ship	Wait 5 min for acknowledgement (ACK BQ) signal after transmission of individual call (ACK RQ). If no ACK BQ signal is received within 5 min, you may retransmit the message. Then, wait 15 min for ACK BQ signal.
Reply to Individual Call. (ACK BQ transmission)	Coast	With delay of 5 seconds to 4 1/2 min after receipt of Individual Call.

3.15 Menu List




4 ·····> PRINT OUT
AUTO/MANU
AUTO (Automatic printing)
MANU (Manual printing)
TYPE (Printer type)
QUICK (For PP-500/PP-510)
SLOW
EEROM (Contents of EEPROM)
6 ·····> SOUND
KEY-CLICK
ON
OFF
MONITOR
OFF
1 (AF line out)
2 (AF line in)
3 (NMEA Tx data)
4 (NMEA Rx data)
5 (DMC Tx data)
6 (DMC Rx data)
7 ·····> FILE
MESSAGE (Storing message. Max. 99)
ADDRESS (Storing other station ID. Max. 99)
TEL No. (Storing telephone number. Max. 99)
Work-F (Storing Working frequency. Max. 99)
DSC-F (Storing DSC frequency. Max. 50)
9 ·····> SYSTEM
V (Confirmation of ROM version number)
P
ID (Own ship ID)
N/C (NMEA/CIF)
DMC (ON/OFF)
DP (ON/OFF)
RT (Installation type)
K (Tx-key timing)
L (AF line output level)
0 ·····> SCAN FREQ.
F1 / F2 · · · · / F6
ALM ···> ALARM (Receive alarm)
ON/OFF
ON
OFF
TYPE — 0/1/2· ·/9 (Distress and urgent alarm tones)
Default settings shown in highlight.


Normal display
ENT
* MF/HF call message *
Format 2
(Preparing transmit message)
FORMAT (CALL TYPE)
TEST
COAST ADDR
INDIVIDUAL
ADDRESS
CATEGORY
TELECOM
WORKING FREQ
TELEPHONE (PSTN)
COAST ADDR
TEL NO.
ALL SHIPS
CATEGORY
TELECOM
WORKING FREQ
R/A (DISTRESS RELAY··ALL SHIPS)
DIST SHIP ID
N OF DIST
POS & TIME
TELECOM
DIST FREQ
R/S (DISTRESS RELAY··INDIVIDUAL)
COAST ADDR
DISTRESS
NATURE OF DISTRESS
POSITION & TIME
TELECOM
GROUP
GROUP ADDR
CATEGORY
TELECOM
WORKING FREQ
GEOGRAPHIC AREA
OCEAN ADDR
CATEGORY
TELECOM
WORKING FREQ
POSITION REQUEST
ADDR
CATEGORY
(Normally ROUTINE)
POLLING
ADDR
CATEGORY
(Normally ROUTINE)
MEDICAL TRANSPORT
TELECOM
WORKING FREQ
NEUTRAL CRAFT
CATEGORY
WORKING FREQ


Normal display
8
Received call < >
DISTRESS ORDINARY
(Viewing contents of receive message)
ORDINARY
LOG No.
(1 – 50)
INDIVIDUAL
ACK
TELECOM
WORKING FREQ
SEMI-AUTO/
AUTO
(Telephone)
END
NEXT
DEL
ALL SHIPS
GROUP
GEOGRAPH
END
NEXT
DEL
DISTRESS
LOG No.
(1 – 50)
DIST ACK
RELAY
1. INDIVIDUAL
COAST ADDR
2. ALL SHIPS
END
NEXT
DEL

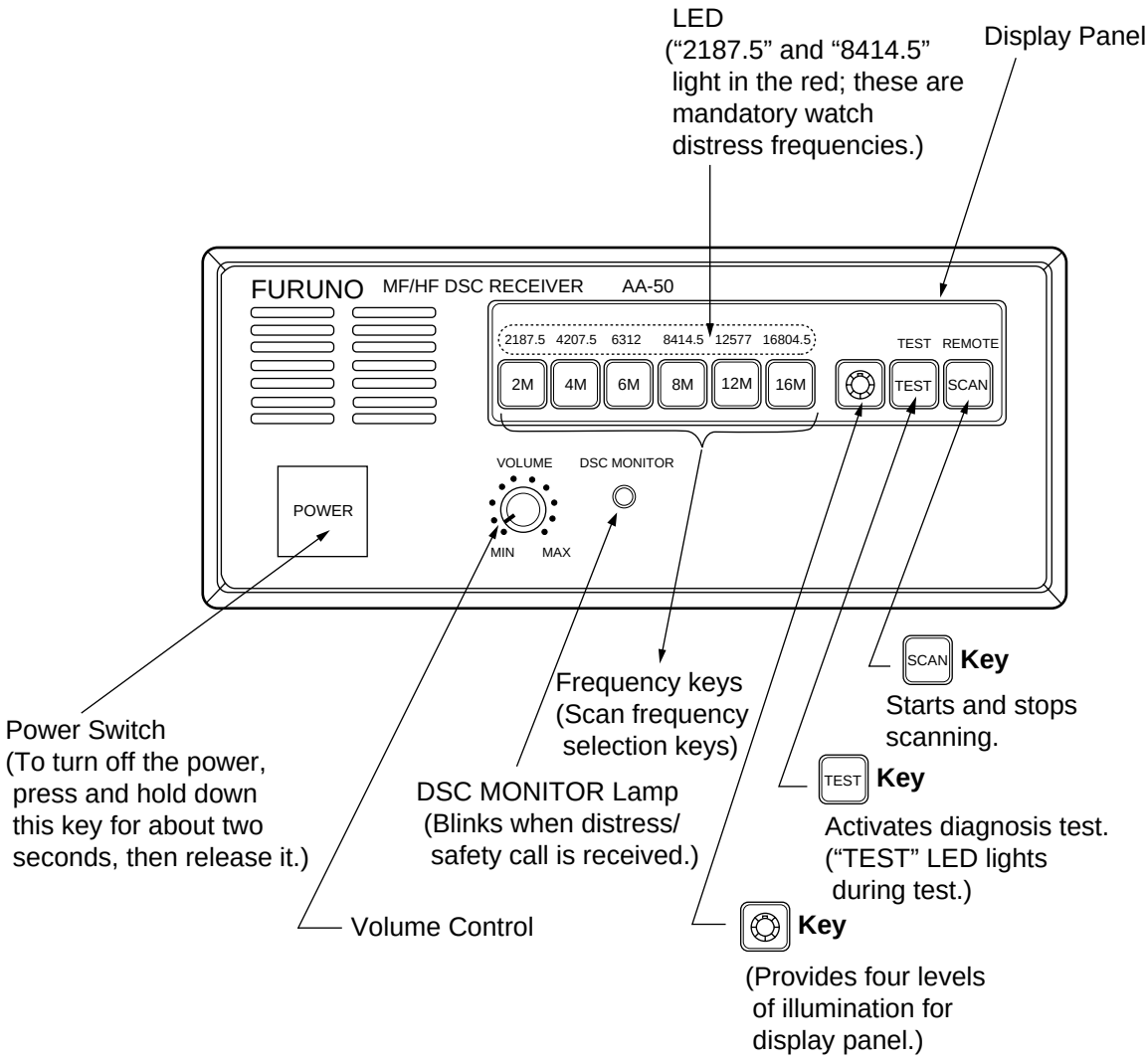
Normal display
9
Xmitted log No. < >
(Viewing contents of transmit message)
XMITTED
LOG No.
(1 – 50)
CALL
WORKING FREQ
END
NEXT
DEL

Chapter 4 AA-50

4.1 Overview

The AA-50 MF/HF DSC Receiver watches DSC distress and safety frequencies and is mainly designed for use in ocean areas A3 and A4. It can watch six DSC distress and safety frequencies, however it is mandatory to watch on three: 2187.5 kHz, 8415 kHz and one more DSC distress and safety frequency. The equipment is set at the factory to watch all DSC distress and safety frequencies.

Turn on the AA-50 to start watching on DSC distress and safety frequencies. Rotate the VOLUME control to adjust the volume of the loudspeaker. Adjust backlighting for the keyboard, if necessary.



4.2 Deleting Scan Frequencies

1. Press the SCAN key to stop scanning. Currently selected frequency LEDs blink.
2. Select frequency to delete by pressing appropriate Frequency key (4M, 6M, etc.). (You cannot deselect 2 MHz, 8 MHz and one more; watch on them is mandatory.)
3. Press the SCAN key to resume scanning.

4.3 Selecting Frequency to Scan

1. Press the SCAN key to stop scanning.
2. Press desired Frequency key. Its LED blinks.
3. Press the SCAN key to resume scanning.

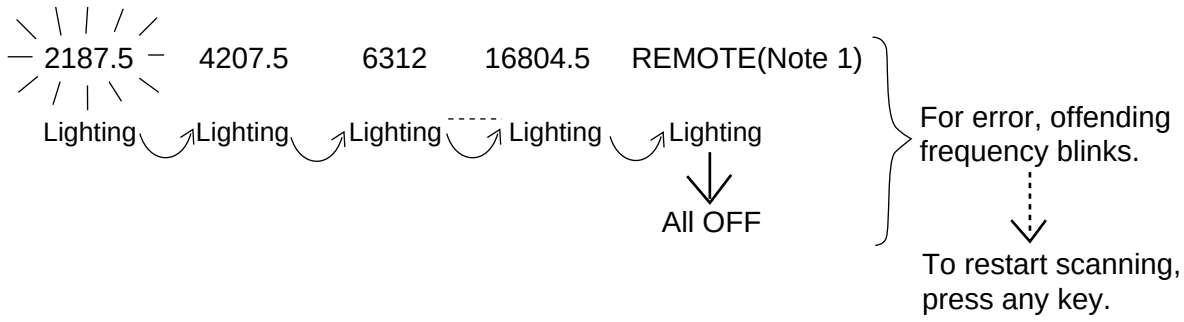
4.4 Receiving

When you receive a distress or safety call the AA-50 locks onto the frequency, the DSC MONITOR lamp blinks, and the DSC message is forwarded to the DSC-6.

4.5 Daily Check (Diagnosis Test)

Check the unit daily for proper operation. Press the TEST key. The TEST LED lights.

If normal, the LEDs above the Frequency keys light from left to right.



Note 1: Remote line test between AA-50 and DSC-6.

The diagnosis test automatically stops and then scanning begins. (TEST LED goes off.)

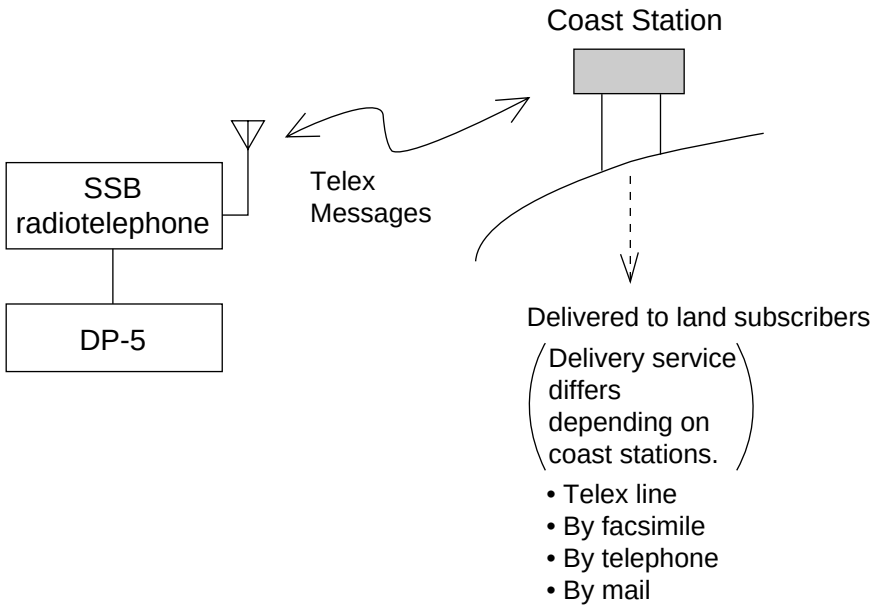
Chapter 5 NBDP

DP-5

5.1 System Overview and Communications Modes

The DP-5 is a NBDP Terminal which receives and transmits Telex messages. As shown in the figure below it requires the SSB radiotelephone to function. Without the SSB radiotelephone the DP-5 is inoperative.

This chapter explains how to transmit and receive Telex messages. All Telex messages initially arrive at a coast station where they are forwarded to the Telex subscriber specified.



The DP-5 receives Maritime Safety Information (MSI) via the SSB radiotelephone which specific coast stations broadcast on HF bands.

The DP-5 and DSC-6 share a printer. This printer prints all receive and transmit Telex messages. Note that the function of “screen print” is <u>not</u> available.

Note: For GMDSS vessels watch on MSI is mandatory. This can be done with the NX-500 Navtex Receiver or the EGC Receiver built in the Inmarsat C.

2. Communications Modes (ARQ and FEC)

ARQ mode

ARQ is an acronym meaning Automatic Retransmission reQuest. It allows private communications between any two stations using semi-duplex communications. The transmitting station sends information in a block of three characters and the receiving station confirms receipt and sends acknowledgement to transmitting station if the information is received correctly. Once a block of information has been received correctly the transmitting station sends the next block of three characters. As mentioned above, the transmitting station sends information while reception confirmation is done, to assure that each character is received correctly. In case of error, the receiving station requests retransmission of block which contained error. Request for retransmission can be repeated up to 32 times (takes about 15 seconds) until information have been received error-free. After 32 times, the transmitting station automatically initiates a new call (takes about 15 seconds). If a block still contains error, the communication line is automatically disconnected.

This mode is mainly used to communicate with a coast station.

FEC mode

FEC is an acronym meaning Forward Error Correction. In this mode the transmitting station sends information twice with a 280 ms interval between transmissions to reduce receive error. However the transmitting station is not provided with receipt confirmation. Therefore, use this mode for one-way uninterrupted transmission of messages where confirmation of receipt is not required.

This mode is mainly used for distress communications.

Note 1. There are two FEC modes:

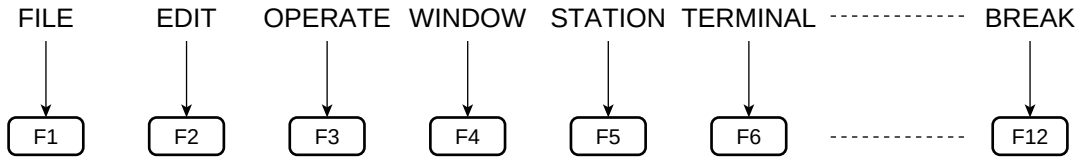
- All Ships call (collective B-mode) where no station is specified
- Individual call (selective B-mode) where station is specified

2. MSI broadcasts are transmitted from coast station using the FEC mode.

5.2 Menu Overview

The function keys (F1-F12) at the top of the keyboard control the function menus (FILE, EDIT…) at the top of the screen.

The [Esc] key functions to undo previous operation.



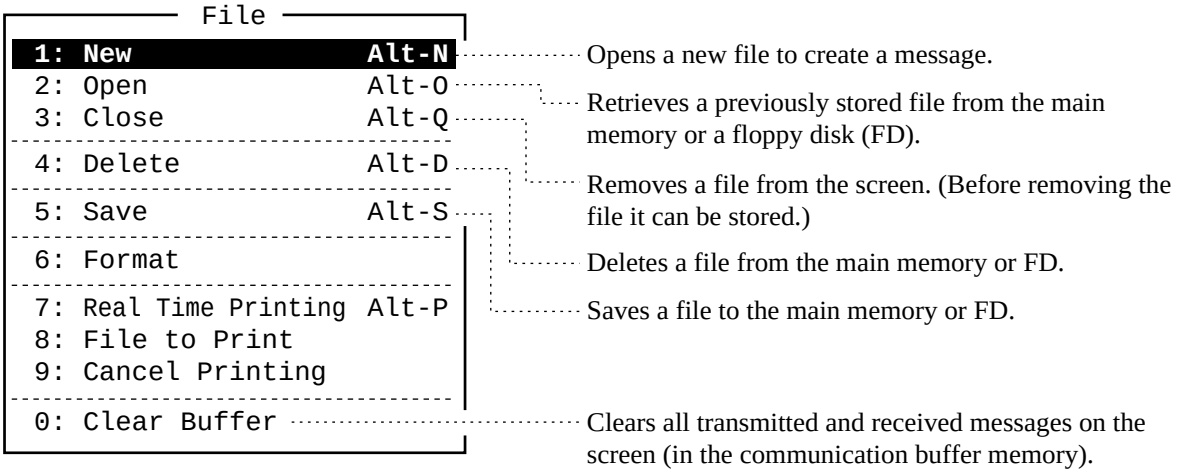
Selecting menus

Items in each function menu can be selected two ways:

1) Select item by arrow keys and press the [Enter] key.
2) Direct keyboard input of item number.

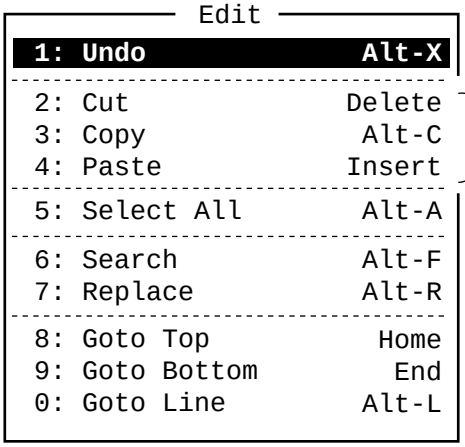
Menu description

[F1] (FILE)



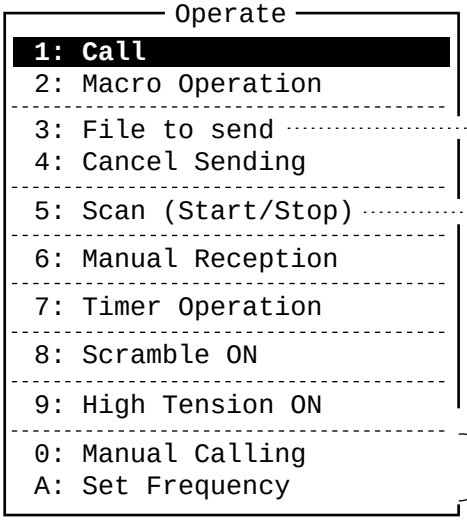
F2 (EDIT)

The EDIT menu provides word processing functions. This function is operative on the message editing screen only.



You can delete (cut), copy and move (paste) text.
Select the text to process by pressing the → or ↓ key while pressing and holding down the Shift key.

F3 (OPERATE)



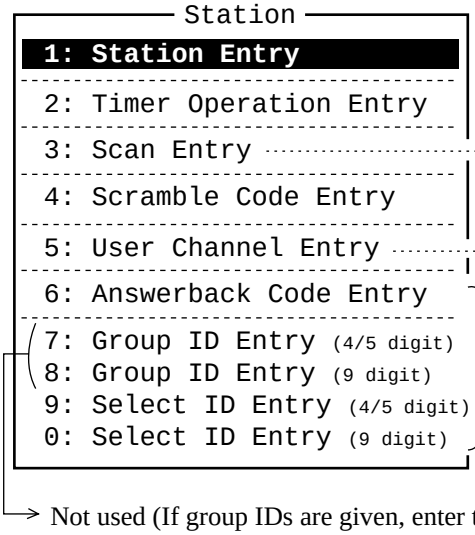
After connection is established with coast station, you select a file in the main memory or FD to transmit it.

Starts and stops frequency scan reception.

Normally calls coast station by using these two functions.

For further details, refer to page 5-11.

F5 (STATION)



Registers scan frequencies with a scan group. (Maximum 10 scan groups programmable)

Registers user channels (private frequencies). [Maximum 100 user channels (0-99) programmable]

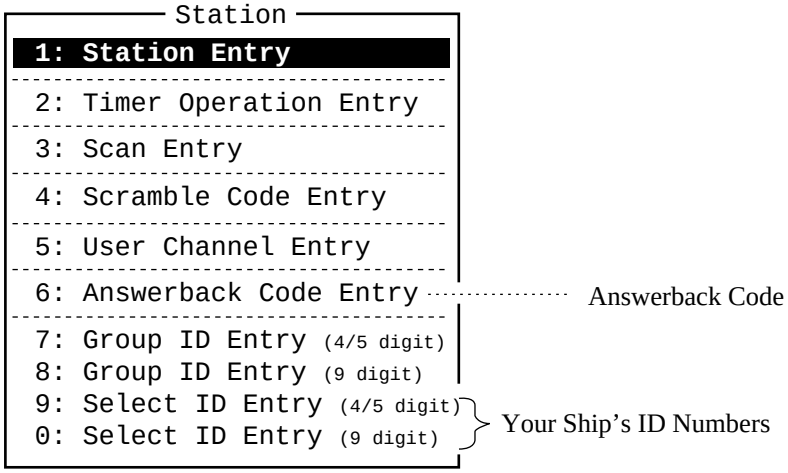
See next page.

→ Not used (If group IDs are given, enter them here.)

5.3 Confirming Settings Before Communicating

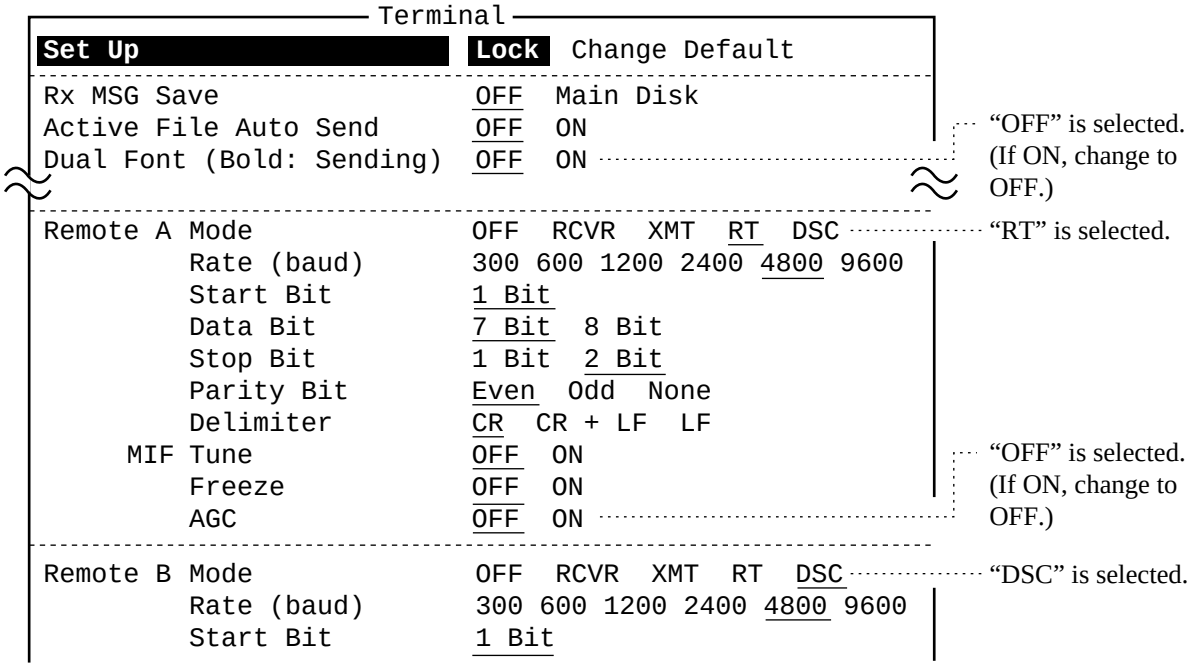
Before communicating for the very first time confirm the following settings, entered by the installer of the equipment. If you find wrong information contact a FURUNO agent or dealer. Regulations forbid change of some settings by radio operator.

1. Press the F5 key to display the STATION menu. Check that answerback code and your ship ID numbers (both 5 and 9 digits) have been entered correctly.



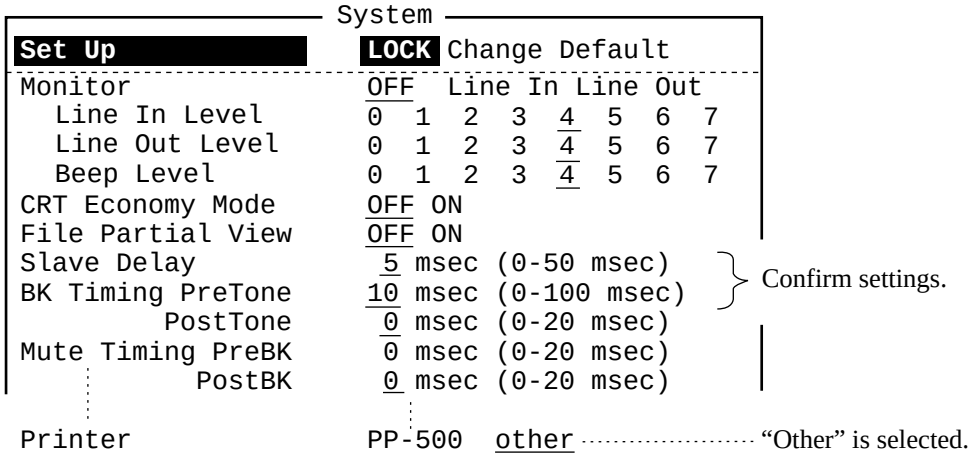
   Check above items referring to answerback code and ID number labels attached to the rack console.

2. Press the F6 key (TERMINAL). Confirm that Remote A mode is set to RT and Remote B mode to DSC. Furthermore, check the items below.
   - "Dual Font": OFF
   - "MIF AGC": OFF



   Scroll the menu with the arrow keys to confirm settings. The settings of Remote A and Remote B modes cannot be changed; the cursor jumps when placed on those items.

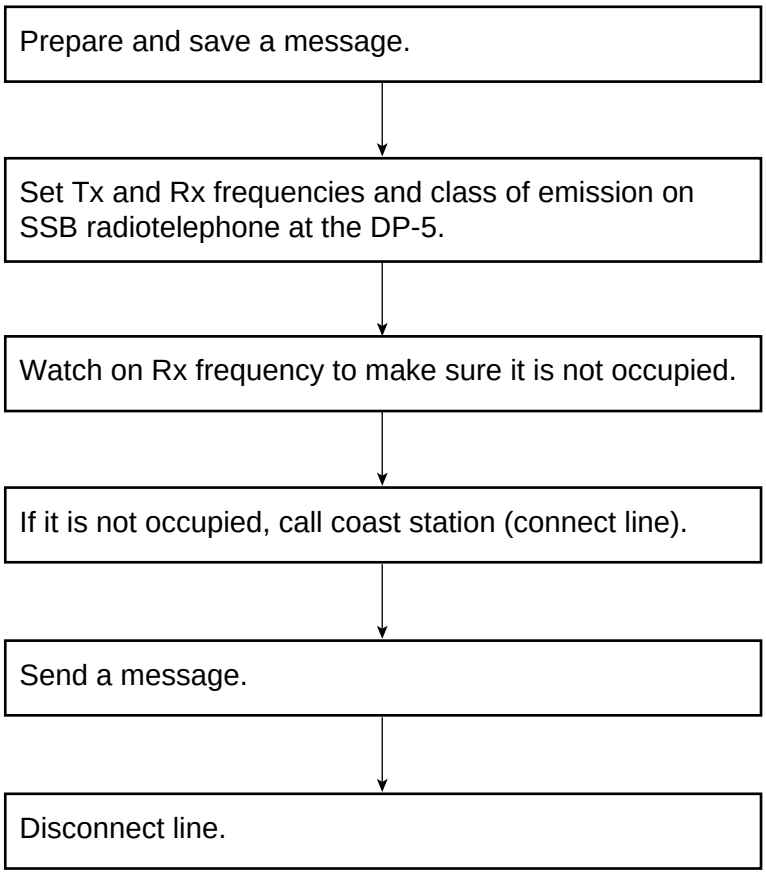
3. Press F8 (SYSTEM). Check that Slave Delay is selected to 5 ms, BK Timing PreTone to 10 ms and Printer to Other.



Scroll the menu with the arrow keys to confirm settings for Slave Delay, BK Timing PreTone and Printer. The settings cannot be changed; the cursor jumps when placed on those items.

Confirm that the indication "Print" appears in inverse video on the screen to indicate that all transmit and receive messages are printed out. If not, press F1 7 (Real Time Printing). If you want to turn off this function (real time printing), press F1 7 again to erase the indication "Print" from the screen.

5.4 Basic Communications Procedure



5.5 Creating/Saving Messages

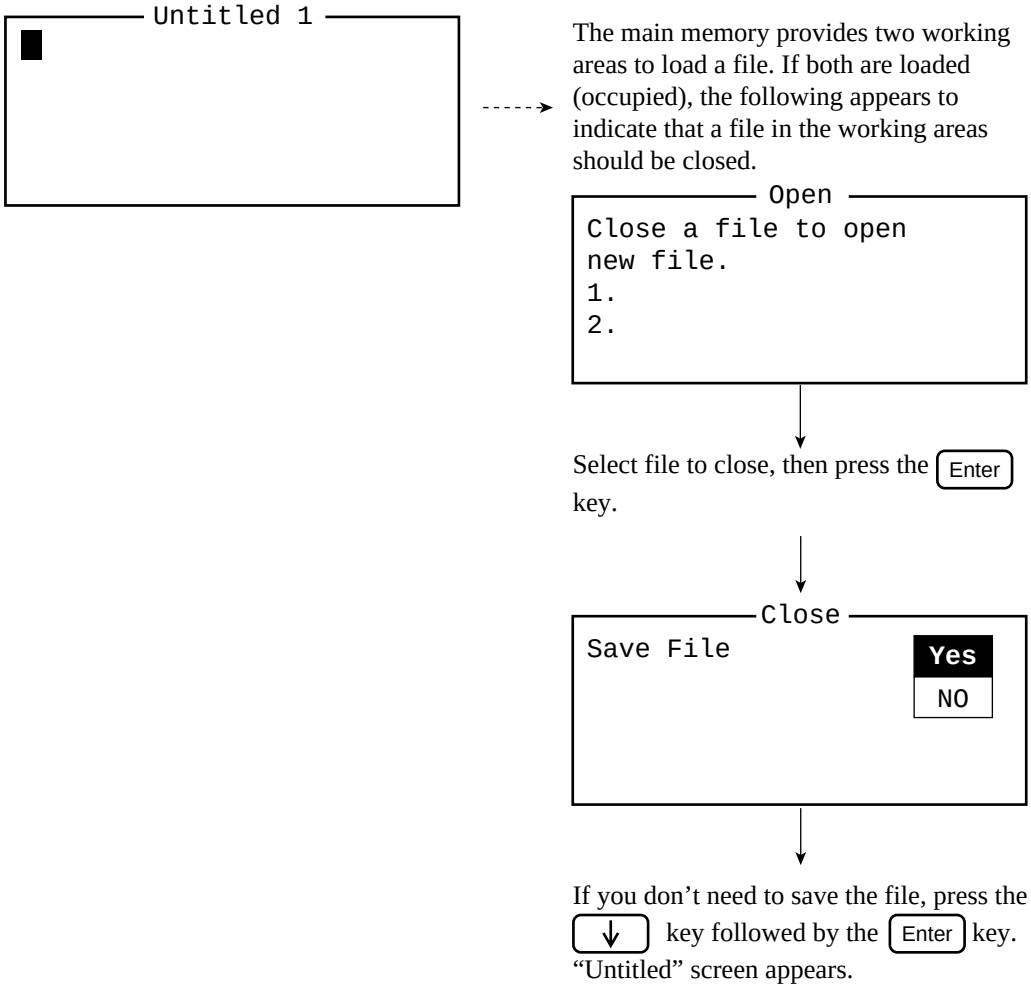
The DP-5 comes with one 3.5” floppy disk (2DD) for storage of messages. Note that the DP-5 cannot use 2HD type floppy disks.

Formatting floppy disks

The floppy disk which comes with the DP-5 has not been formatted. Format it by pressing F1 6 Enter (twice). “Formatting completed” appears when formatting has been completed. Press the Esc key to return to the normal display screen.

Creating messages

1. Press F1 Enter.



2. Type your message. The Back Space key functions to delete the character to the left of the cursor. Use the Enter key to advance the cursor to the next line.
3. At the end of the message type KKKK. This is a code meaning end of message.

Note: Three consecutive dollar signs ($$$) in a message (normally they are placed at the end of message) will automatically disconnect the communications line. In actual communications with a coast station, however, the transmitting station types some messages to the coast station after termination of file transmission. Then the communications line is disconnected manually. Therefore, this function is not available for communications with a coast station.

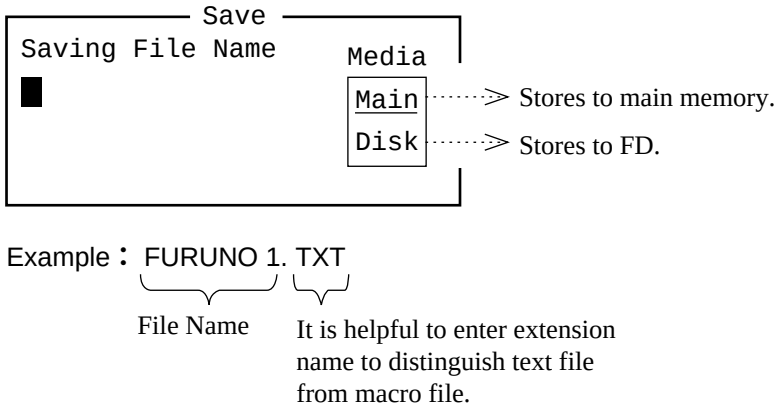
Saving messages

Once you have created a message you can attach a file name to it and save it to the main (internal) memory or floppy disk. The main memory stores 100 Kbytes of data (about 100,000 characters) and a floppy disk 720 Kbytes (about 720,000 characters).

A message can be saved two ways: without losing your place on the editing screen (Save) or save it before clearing the editing screen (Close).

Save

1. Press [F1] [5].
2. Enter file name (up to eight characters).



3. Save the file to;

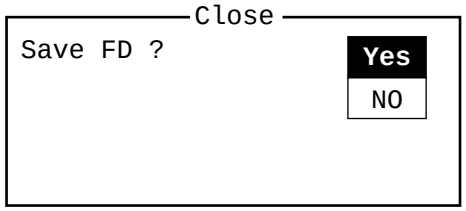
   Main memory: press the [Enter] key.
   Floppy disk: press [→] [↓] [Enter] (twice).

Close

1. Press [F1] [3] [Enter].
2. Follow steps 2 and 3 in “Save” above.

Note: You can close a file without saving it as follows:

1. Press F1 3 .



2. Select “No” with the ↓ key.
3. Press the Enter key.

5.6 Transmitting Messages

Set up the DP-5 as follows to transmit a message to a coast station. Note that the frequency on the SSB radiotelephone should be set to other than 2182 kHz, otherwise the DP-5 can not control frequency on the radiotelephone.

Setting frequency

1. Press F3 A .

```
Set Frequency
      Tx Freq :  0.00
      Rx Freq :  0.00
```

2. Enter Tx frequency.
3. Press the ↓ key and enter Rx frequency.
4. Press the Enter key to set frequencies entered at step 2 and 3 on the SSB radiotelephone. (Class of emission is set for Telex.)

Watch on the Rx frequency to make sure it is not occupied. If not occupied proceed to "Calling" below.

Calling

5. Press F3 0 .

```
Manual Calling
Mode : ARQ FEC DIRC CW
ID   :
```

6. Select communication mode ARQ.
7. Press the ↓ key and enter coast station's ID number (4 or 9 digits).
8. Press the Enter key to call station.

CONNECT and SEND appear in inverse video successively when communications line is established. In the ARQ mode answerback codes are mutually exchanged. An example of this is shown below:

```
  File Edit Operate Window  Station Terminal Editor System  WRU HR Over Break
-------------------------------------------------------- 1995-10-08 14:28  (JST) -------- Caps
  Station Name    :
  Frequency (T/R) :  8765.00 / 8965.00 (kHz) Comm Mode : ARQ
  Comm Status     : Connect  Send  Lock  Error  Mark  Space
  Sending Volume  : 100 (%)   ARQ Error : 0  ARQ Time : 0 (sec)
-------------------------------------------------------------------------------------------------------
```

```
12345 FURU ×  ..... Your Ship s Answerback Code
2361 JOS J
MON           ..... Messages from Coast Station (Nagasaki)
GA+?
```

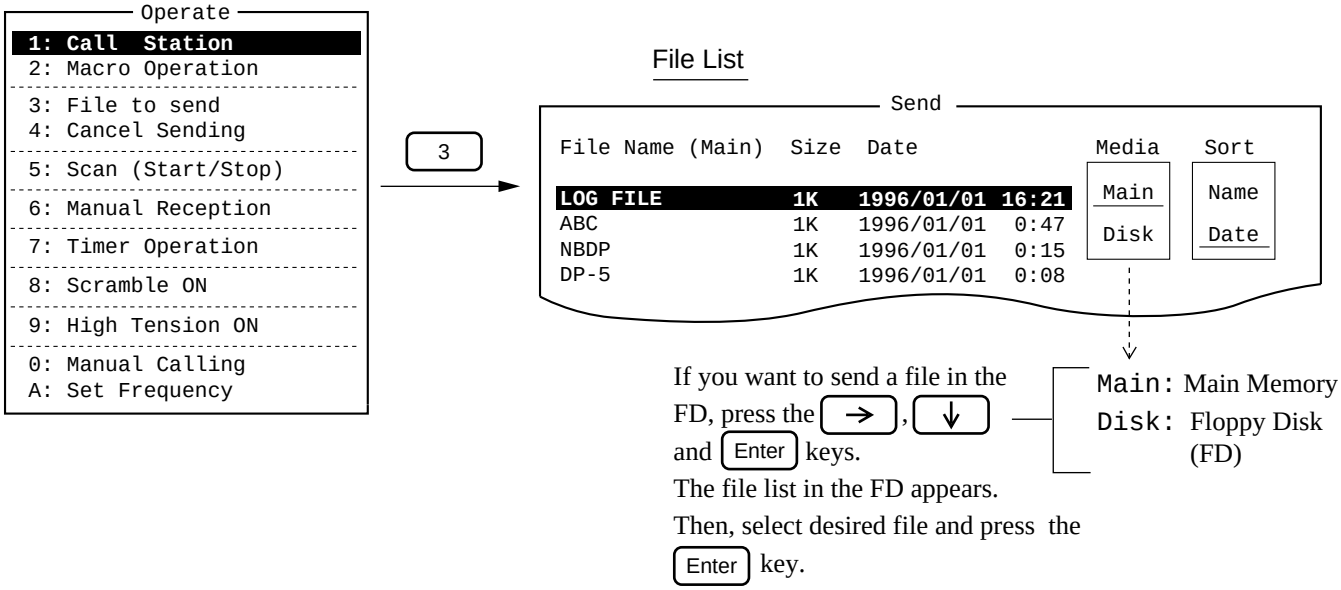
Example of Answerback Code Exchange

Transmitting messages
(Refer to page 5-13 for actual communications)

9. Communicate with coast station (type command and some messages) through the keyboard when you receive “GA+”.

10. To transmit a file stored in the memory, press [F3] [3] to display file list, select a file to send, then press the [Enter] key.

When the [F3] key is pressed:



11. After sending a file (message), communicate with coast station (type some messages) through the keyboard and then press the [F12] key to disconnect the communications line.

Note: In the ARQ mode you can request immediate confirmation of your message by pressing the [F11] (OVER) key. This action restores the “SEND” indication (not highlighted) and your station becomes the receiving station.

5.7 Actual Communications

After connection is established with a coast station (on ARQ mode), communications begin as below, in order to send a message to a land subscriber via the coast station. For abbreviated terms, refer to page 5-13C.

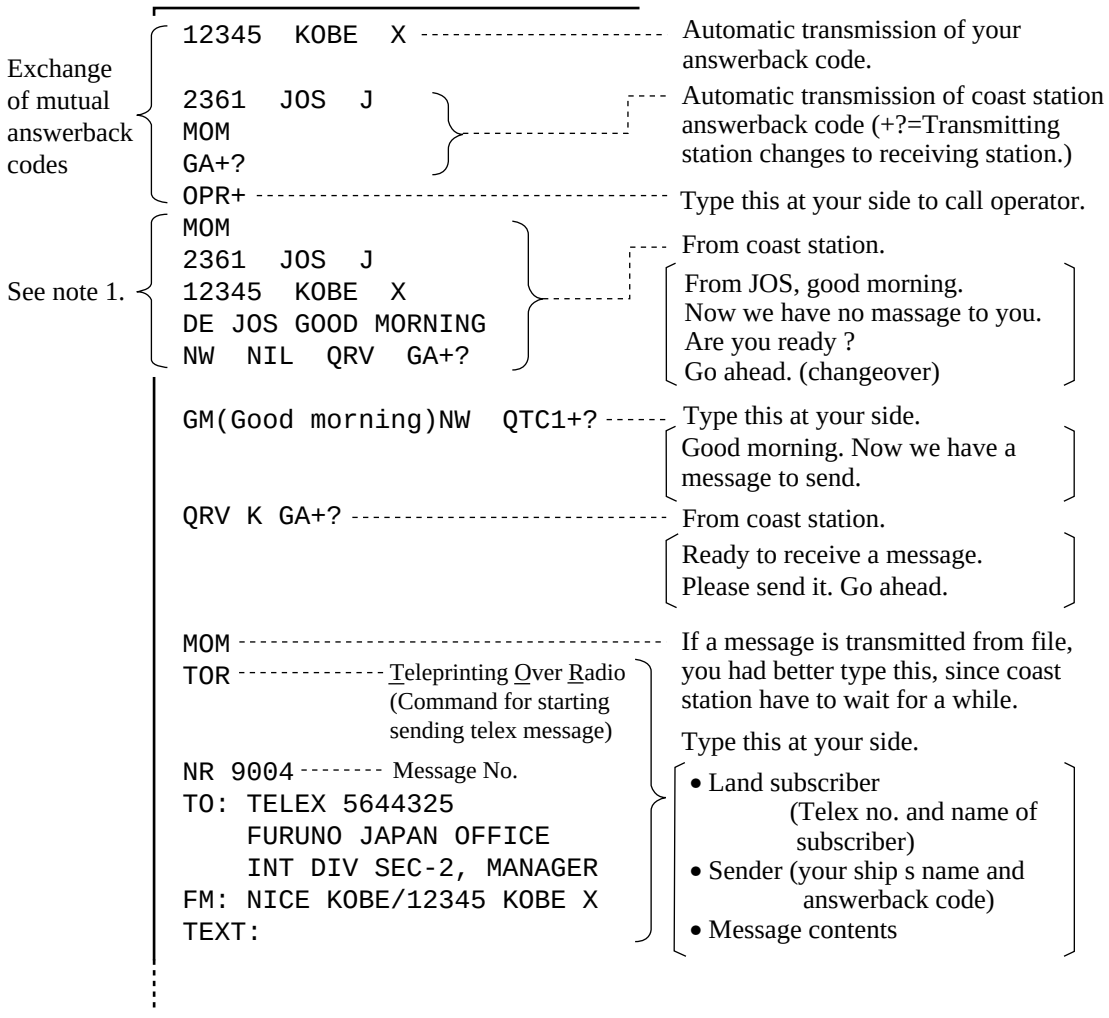
(ex)

Ship Name	: NICE KOBE
Selcall No.	: 12345
Answerback Code	: 12345 KOBE X

Coast Station	: Nagasaki Coast Station
Selcall No.	: 2361
Answerback Code	: 2361 JOS J

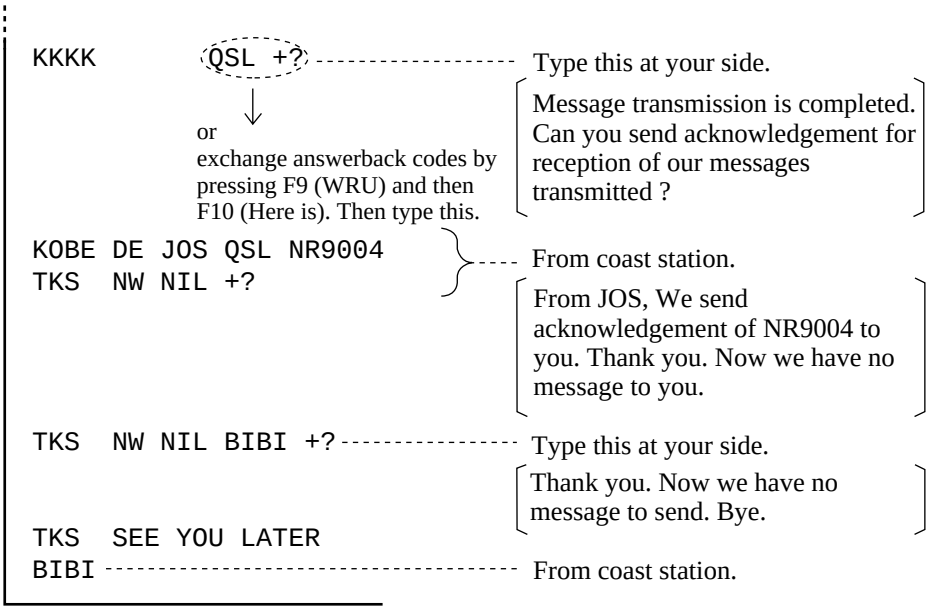
Land Subscriber	: FURUNO JAPAN OFFICE INTERNATIONAL DIVISION SECTION-2, MANAGER
Telex No.	: 5644325
Answerback Code	: 5644325 FURUNO J

<u>Example of Manual Communications</u> (After connection is established.)



(continued on next page)

(from previous page)



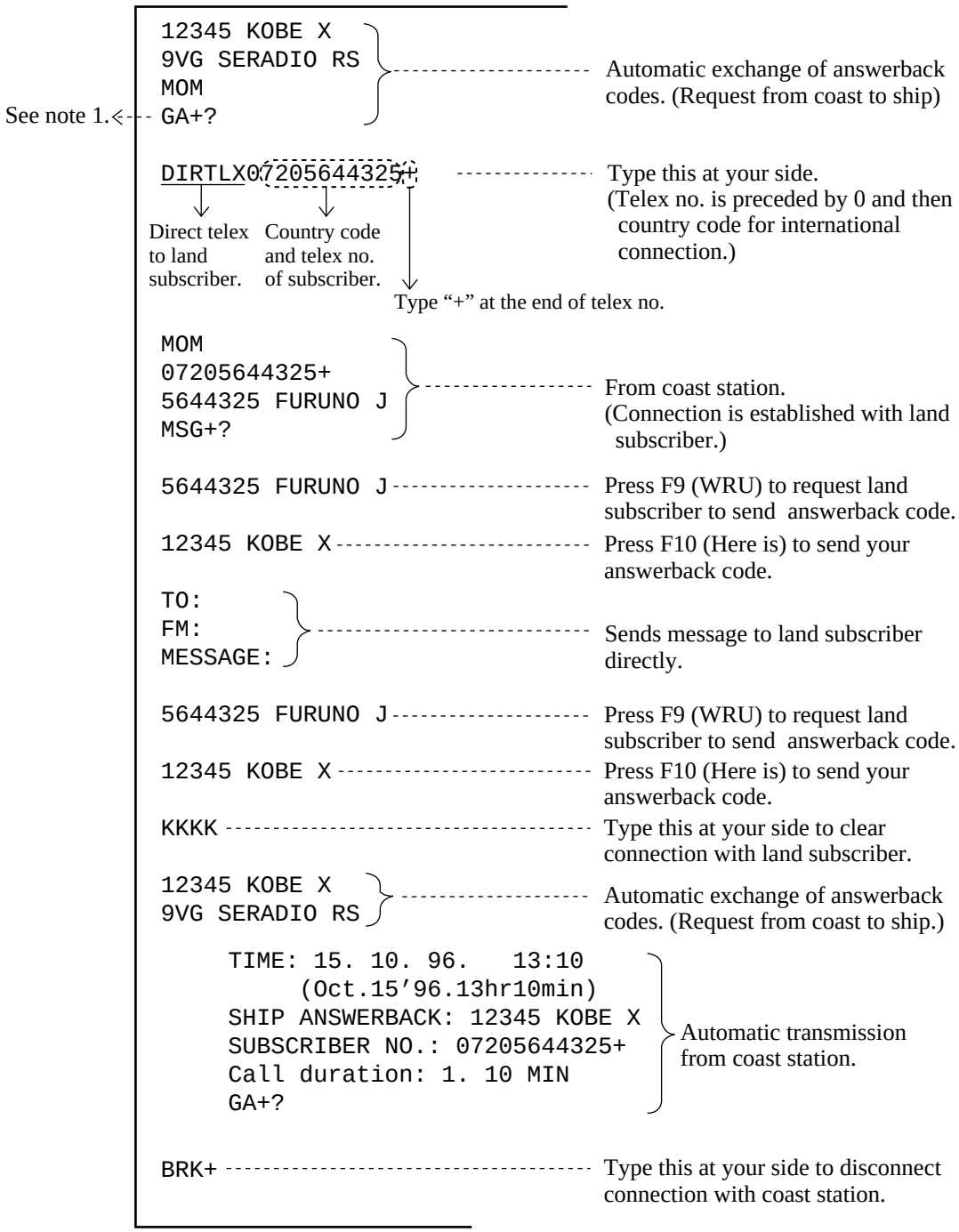
Connection is disconnected by the coast station. (If you want to disconnect connection at your side, press the F12 (Break) key.)

Note 1: When you call a coast station for the first time, it requires you to give your ship's name, selcall no., call sign and AAIC (accounting authority) to register you with its computer. Reply correctly. Then, follow instructions of the coast station. (After registration, automatic communications (both Tx and Rx) may be available as long as your answerback code is correctly registered on the DP-5. Refer to the next page for automatic communications.)

Note 2: If wrong character is entered (typed), type XXXXX (five X characters) and type correct character.

Example of Automatic Communications (not available for Nagasaki station)

Coast station	: Singapore Coast Station
Selcall No.	: 4620
Answerback Code	: 9VG SERADIO RS



Note 1: If there is telex traffic on hand (in the coast station) , "MESSAGE AVAILABLE. PLEASE USE MSG+" appears instead of "GA+?". If so, type MSG+ on the next line to receive a message from land subscriber through coast station.

List of Abbreviations

Abbreviation	Question	Answer or Advice
QRA	What is the name of your vessel (or station)?	The name of my vessel (or station) is ...
QRC	By what private enterprise (or state administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise ... (or state administration).
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRX	When will you call me again?	I will call you again at ... hours on ... kHz (or MHz).
QSJ	What is the charge to be collected to... including your internal charge?	The charge to be collected to ... including my internal charge is ... francs.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSX	Will you listen to ... (name and/or call sign(s)) on ... kHz (or MHz), or in the bands .../ channels ...?	I am listening to ... (name and/or call sign(s)) on ... kHz (or MHz), or in the bands .../ channels ...
QTC	How many telegrams have you to send?	I have ... telegrams for you (or for ... (name and/or call sign)).
QTU	What are the hours during which your station is open?	My station is open from ... to ... hours.

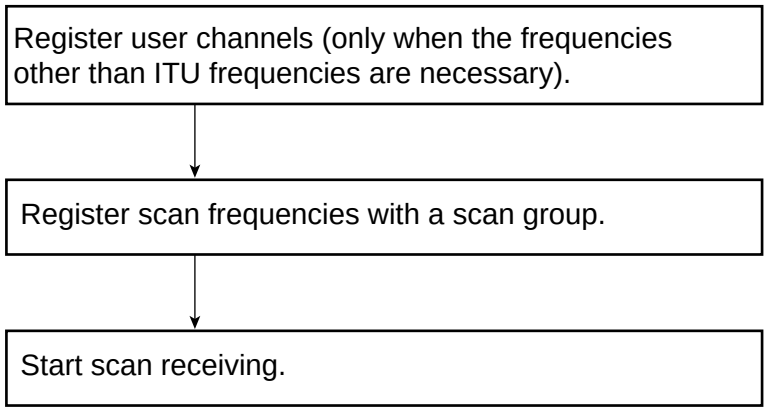
Abbreviation or Signal	Definition
BK	Signal used to interrupt a transmission in progress.
CFM	Confirm (or I confirm).
DE	“From ...” (used to precede the name or other identification of the calling station).
K	Invitation to transmit.
NIL	I have nothing to send to you.
NW	Now.
PSE	Please.
R	Received.
REF	Reference to ... (or Refer to ...).
RPT	Repeat (or I repeat) (or Repeat ...).
SVC	Prefix indicating a service telegram.

Commands and Abbreviations

Command	Meaning
TGM+	Telegram. Automatic transmission of telegram to coast station.
MSG+	Message. Automatic reception of telegram from coast station.
OPR+	Operator. Operator call (Manual communications).
URG+	Urgent. Urgent call.
MED+	Medicine. Call relative to medicine (Medical call).
TEST+	Test. Requests coast station to send test message (QBF messages).
BRK+	Break. Disconnects connection with coast station. This is only available for automatic communications.
HELP+	Help. Requests coast station to send information of service operating procedure.
Abbreviation	
GA+?	Go Ahead. I am ready to receive your command (message). Please send it.
MOM	Moment. (Wait a moment.)
MSG+?	Message. Please send a message.
KKKK	Termination of message transmitted. This should be typed at the end of message.

5.8 Other Features (Helpful Functions)

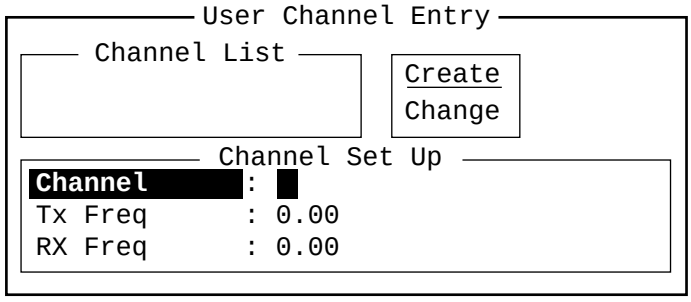
1. Scan receiving



Registering user channels

100 user channels (private frequencies) can be registered.

1. Press [F5] [5].



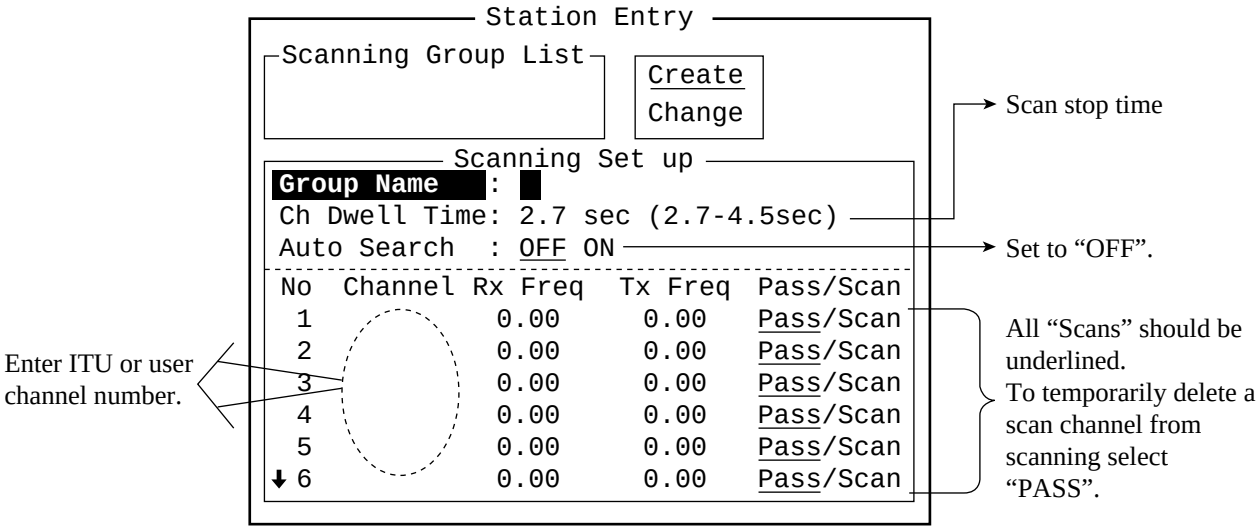
When a user channel is already registered, "Change" is underlined. If so, press the [→], [↑] to move the underline to "Create" and then press the [Enter] key to get the screen shown left.

2. Enter channel number (0 to 99).
3. Press the [↓] key and enter Tx frequency.
4. Press the [↓] key and enter Rx frequency.
5. Press the [Enter] key twice.
6. Press the [Esc] key to return to the normal display screen.

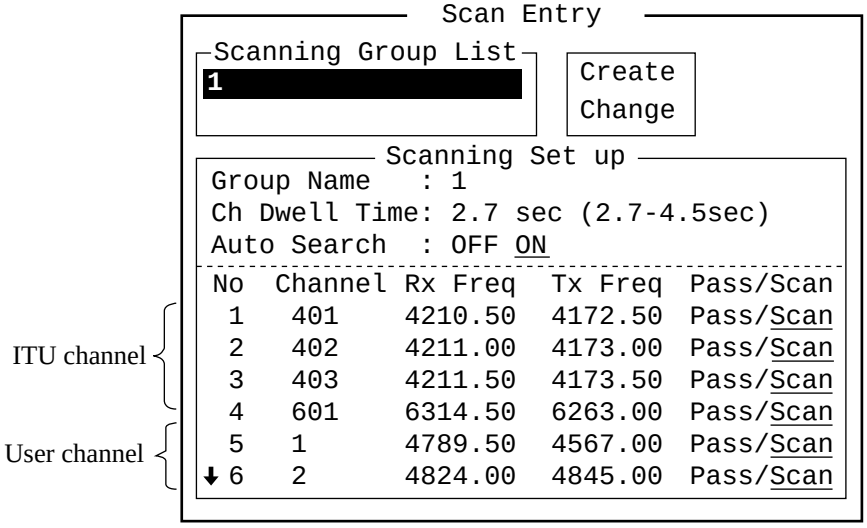
Registering scan frequencies (with a scan group)

Ten scan groups can be programmed and each group can have 20 channels (ITU and/or user channels).

1. Press F5 3.



2. Type in scan group name.
3. Press the ↓ key and enter channel dwell time (scan stop time); 2.7-4.5 sec. The recommended setting is 4.5 sec.
4. Press the ↓ key to select Auto Search. Confirm that it is set to "OFF".
5. Press the ↓ key and enter ITU or user channel.
6. Press the → key to underline SCAN.
7. Enter scan frequency following steps 5 and 6. You may enter 20 frequencies.
8. Press the Enter key twice to register scan frequencies with a scan group. The following screen appears.



9. Press the Esc key to return to the normal display screen.

Starting scanning

1. Press F3 5 .
2. Select scan group desired and press the Enter key.

Scanning can be stopped by pressing F3 5 .

2. Retrieving files

1. Press F1 2 .
2. Select “Media” by pressing the → key .
3. Select Main (main memory) or Disk (floppy disk) and press the Enter key.
4. Select a file to retrieve and press the Enter key.

3. TERMINAL menu

The TERMINAL menu (shown on the next page) may be displayed by pressing the F6 key.

> **“Edit before Sending”** in the Terminal menu enables/disables confirmation of keyboard input before transmitting it. Enable or disable it in accordance with desire of operator.

To change a setting, press the [→] key to display "Change" in inverse video. Then press the [↓] key to select item and change setting with the arrow keys.

```
─────────────── Terminal ───────────────
 Set Up                     Lock  Change Default
- - - - - - - - - - - - - - - - - - - - - - - - - -
 Rx MSG Save                 OFF   Main Disk
 Active File Auto Send       OFF   ON
 Signal Tracking             OFF   ON
 Edit before Sending         NO    YES
 ARQ Error Count             OFF   ON
 Communication Time          OFF   ON
 Dual Font (Bold: Sending)   OFF   ON
 Echo                        OFF   ON
 Sending Volume display      OFF   ON
 Comm. Status display        OFF   ON
- - - - - - - - - - - - - - - - - - - - - - - - - -
```

Rx MSG Save: Incoming message memory.
- OFF: Not stored
- Main: Saves to the main memory
- Disk: Saves to a floppy disk

Active File Auto Send: When ON is selected, a message just prepared in the editing screen is automatically sent immediately after calling and establishing a connection with a coast station.
In actual communications with a coast station, however, the transmitting station types some messages to the coast station after connection with the coast station is established. Then the transmitting station sends a file (messages) manually.
Therefore, this function is not available for communications with a coast station.

Signal Tracking: ON: Tracks incoming signals within ± 80 Hz.

Edit before Sending: YES: Transmits messages only when the [Enter] key is pressed, after confirming the text you just typed.

Echo: Select ON to display outgoing messages on the screen while they are being transmitted. (Normal setting: ON)

Dual Font (Bold: Sending): Set to "OFF".

```
 File Edit Operate Window  Station Terminal Editor System  WRU HR Over Break
------------------------------------------------- 1995-10-08 14:28  (JST) -------- Caps
 Station Name     :
 Frequency (T/R) :          /         (kHz) Comm Mode : ARQ
 Comm Status      : Connect  Send  Lock  Error  Mark  Space
 Sending Volume   : 100 (%)  ARQ Error : 0  ARQ Time : 0 (sec)
--------------------------------------------------------------------------------
```

Mark Space: Shows receiving status of mark/space signals.

Sending Volume: Shows percentage of message (file) transmitted, from 0-100%.

ARQ Error: A message transmitted with ARQ can be retransmitted up to 32 times until it is received error free.

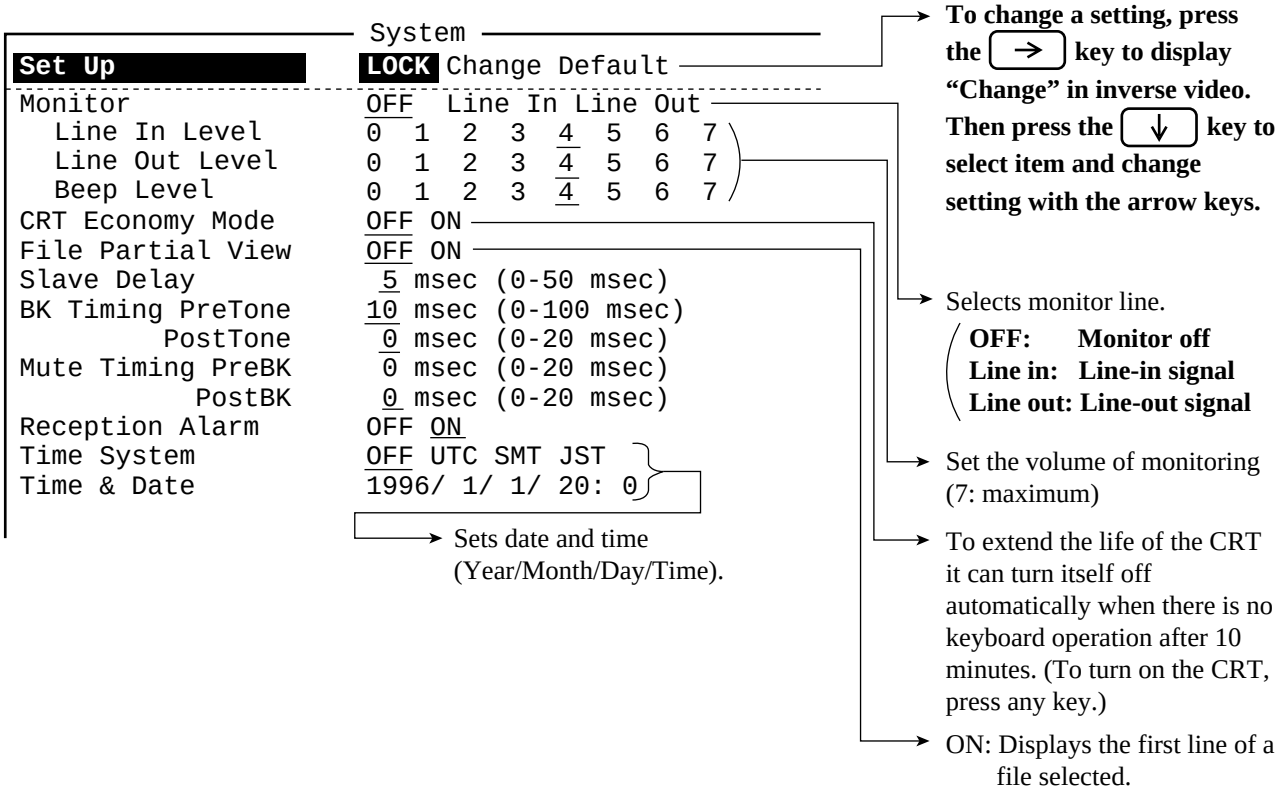
ARQ Time: Elapsed communication time after connection is established.

```
ARQ Error Count         : ON
Communication Time      : ON
Sending Volume Display  : ON
Comm. Status Display    : ON
```

If these are ON, the displays shown above appear.

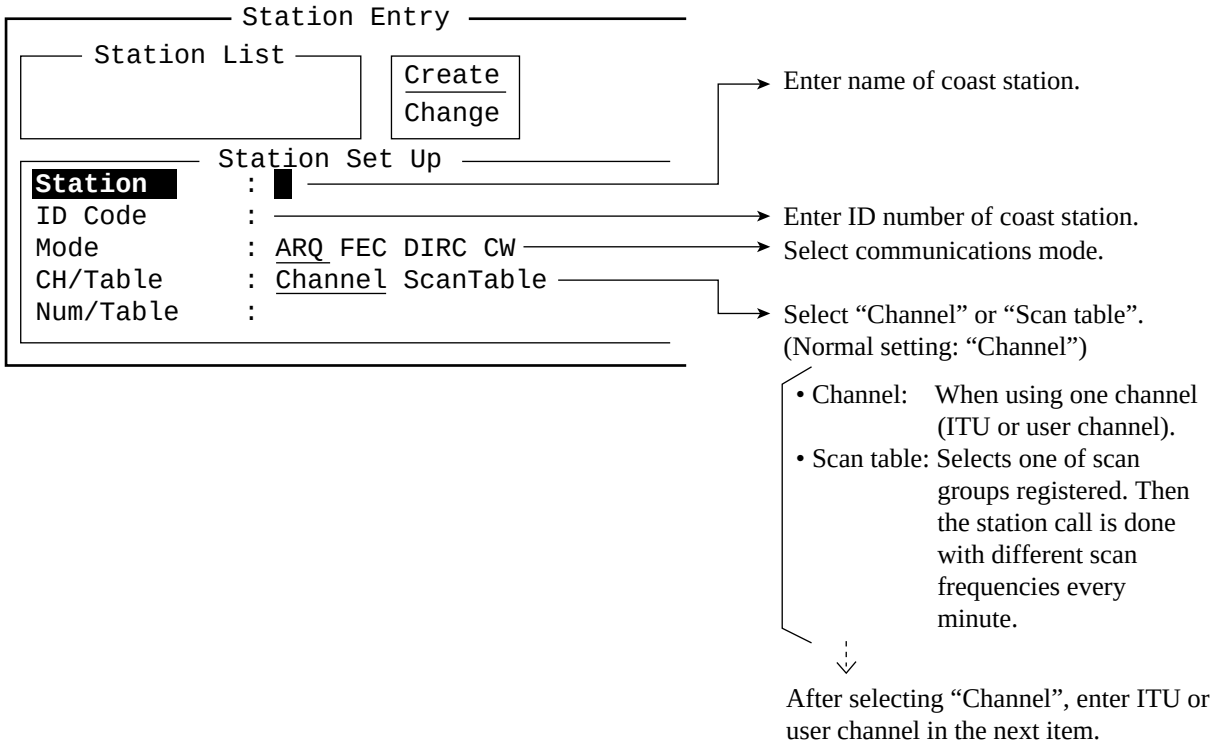
4. SYSTEM menu

The SYSTEM menu may be displayed by pressing the F8 key.

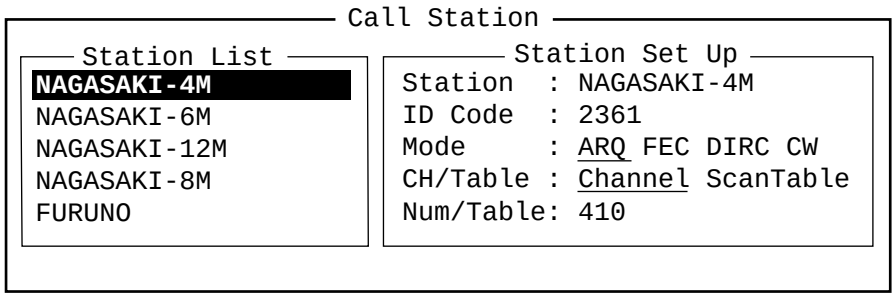


5. Programming station list and calling a station

1. Press F5 Enter.



2. Set each item and then press the Enter key twice.
3. Press the Esc key.
4. Press F3 Enter.



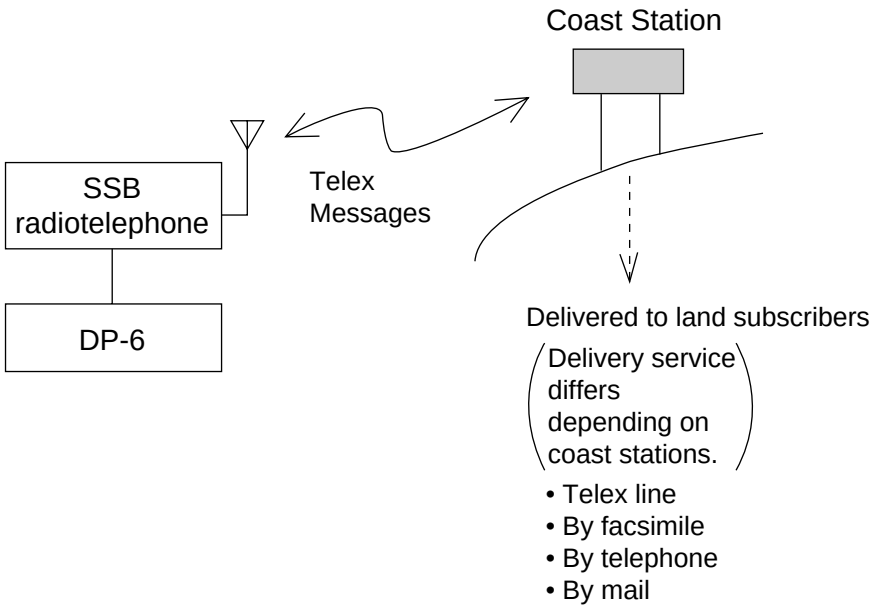
5. Select station with the arrow keys and manually set the frequencies on the SSB radiotelephone. Watch on the Rx frequency to make sure it is not occupied.
6. If the frequency is not occupied, press the Enter key to call station.

DP-6

5.9 System Overview and Communications Modes

The DP-6 is a NBDP Terminal which receives and transmits Telex messages. As shown in the figure below it requires the SSB radiotelephone to function. Without the SSB radiotelephone the DP-6 is inoperative.

This chapter explains how to transmit and receive Telex messages. All Telex messages initially arrive at a coast station where they are forwarded to the Telex subscriber specified.



The DP-6 receives Maritime Safety Information (MSI) via the SSB radiotelephone which specific coast stations broadcast on HF bands.

The DP-6 and DSC-6 share a printer. This printer prints all receive and transmit Telex messages. Note that the function of “screen print” is <u>not</u> available.

Note: For GMDSS vessels watch on MSI is mandatory. This can be done with the NX-500 Navtex Receiver or the EGC Receiver built in the Inmarsat C.

2. Communications Modes (ARQ and FEC)

ARQ mode

ARQ is an acronym meaning Automatic Retransmission reQuest. It allows private communications between any two stations using semi-duplex communications. The transmitting station sends information in a block of three characters and the receiving station confirms receipt and sends acknowledgement to transmitting station if the information is received correctly. Once a block of information has been received correctly the transmitting station sends the next block of three characters. As mentioned above, the transmitting station sends information while reception confirmation is done, to assure that each character is received correctly. In case of error, the receiving station requests retransmission of block which contained error. Request for retransmission can be repeated up to 32 times (takes about 15 seconds) until information have been received error-free. After 32 times, the transmitting station automatically initiates a new call (takes about 15 seconds). If a block still contains error, the communication line is automatically disconnected.

This mode is mainly used to communicate with a coast station.

FEC mode

FEC is an acronym meaning Forward Error Correction. In this mode the transmitting station sends information twice with a 280 ms interval between transmissions to reduce receive error. However the transmitting station is not provided with receipt confirmation. Therefore, use this mode for one-way uninterrupted transmission of messages where confirmation of receipt is not required.

This mode is mainly used for distress communications.

Note 1. There are two FEC modes:

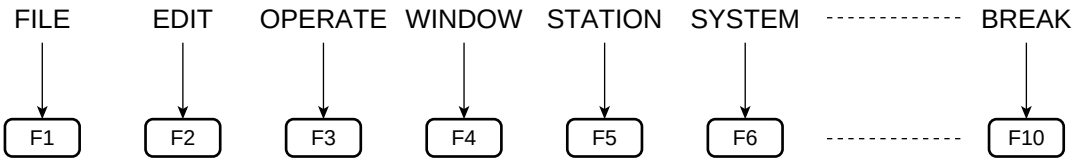
- All Ships call (collective B-mode) where no station is specified
- Individual call (selective B-mode) where station is specified

2. MSI broadcasts are transmitted from coast station using the FEC mode.

5.10 Menu Overview

The function keys (F1-F10) at the top of the keyboard control the function menus (FILE, EDIT…) at the top of the screen.

The [Esc] key functions to undo previous operation.



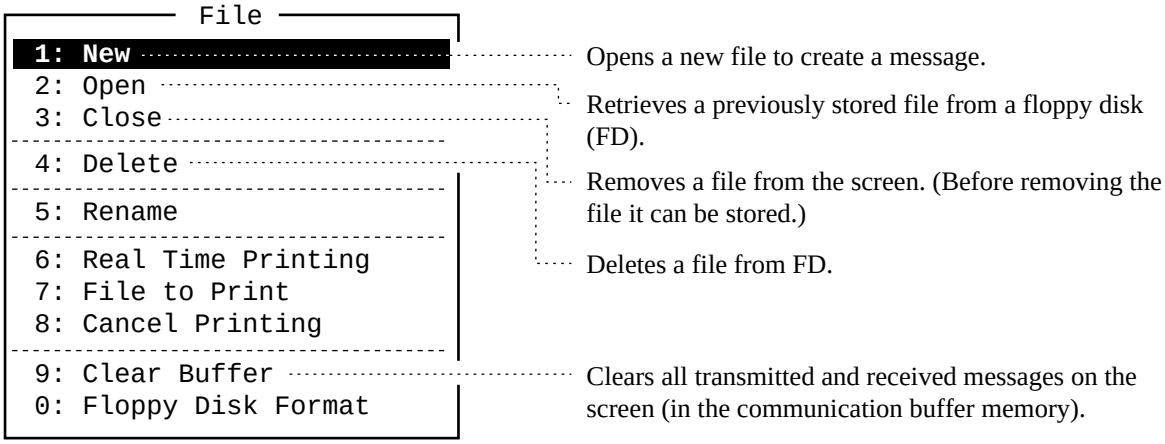
Selecting menus

Items in each function menu can be selected two ways:

1) Select item by arrow keys and press the [Enter] key.
2) Direct keyboard input of item number.

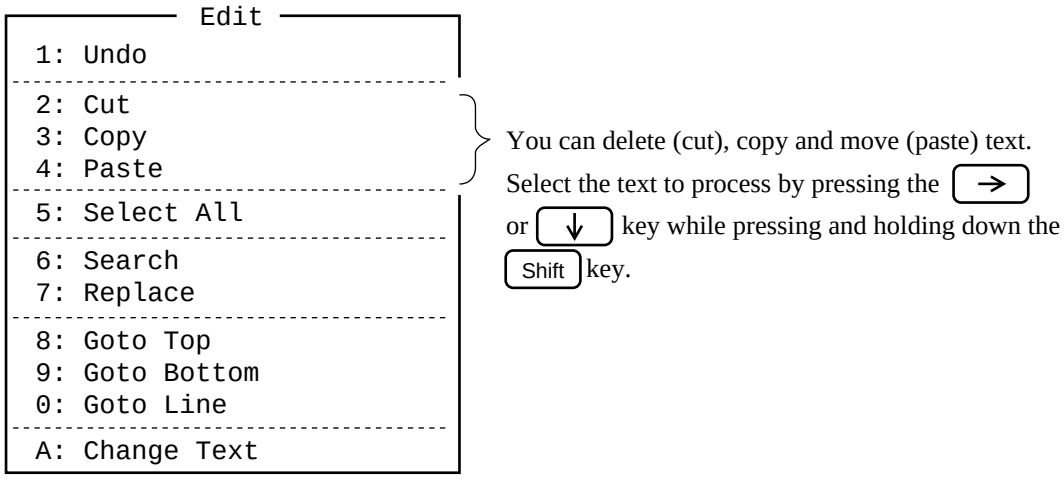
Menu description

[F1] (FILE)

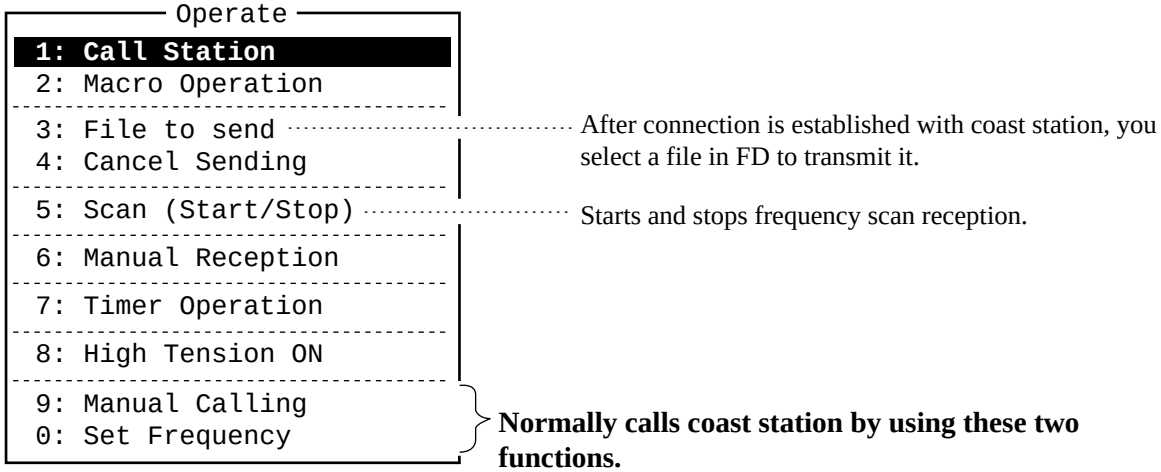


F2 (EDIT)

The EDIT menu provides word processing functions. This function is operative on the message editing screen only.

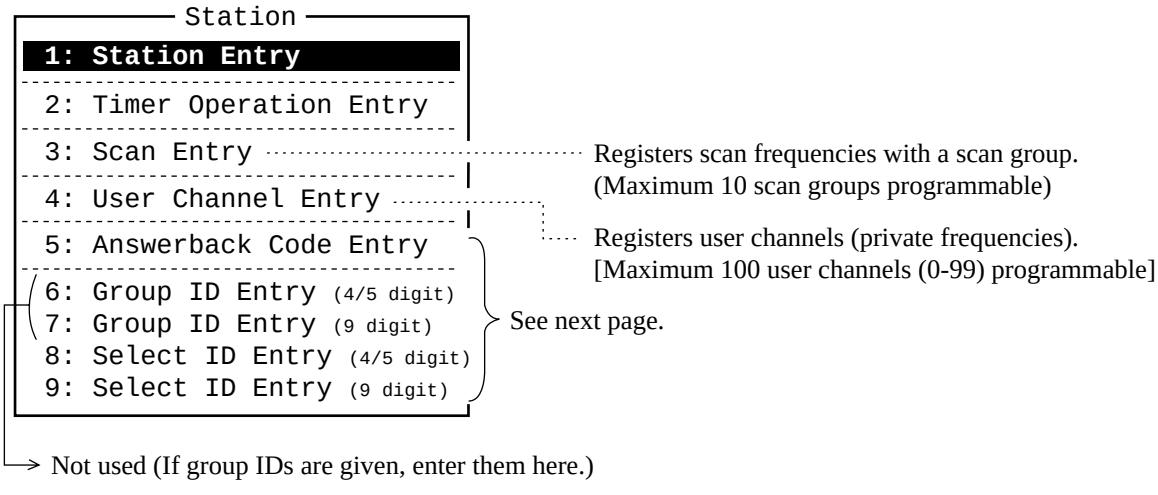


F3 (OPERATE)



For further details, refer to page 5-28.

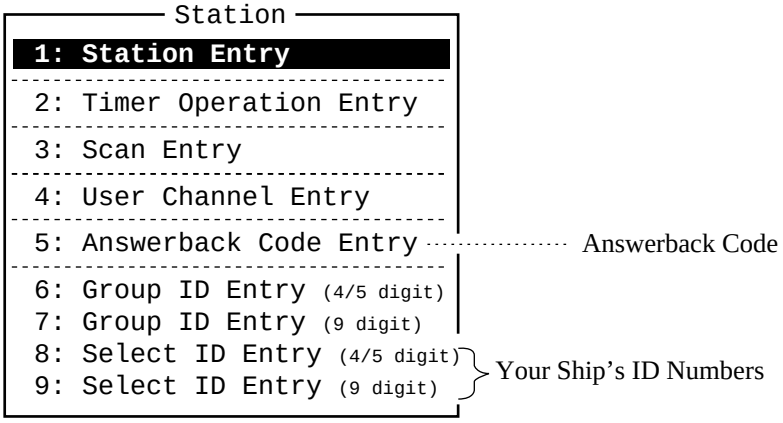
F5 (STATION)



5.11 Confirming Settings Before Communicating

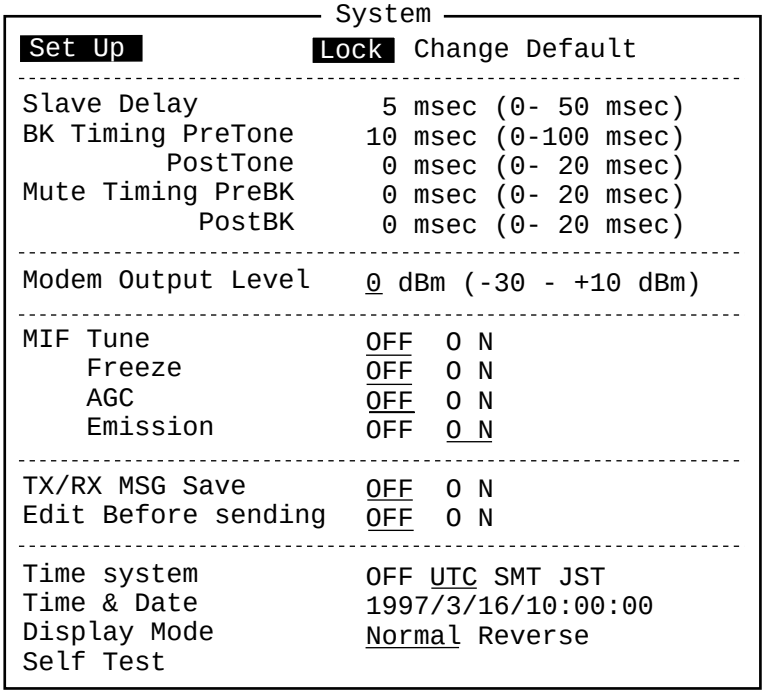
Before communicating for the very first time confirm the following settings, entered by the installer of the equipment. If you find wrong information contact a FURUNO agent or dealer. Regulations forbid change of some settings by radio operator.

1. Press the F5 key to display the STATION menu. Check that answerback code and your ship ID numbers (both 5 and 9 digits) have been entered correctly.



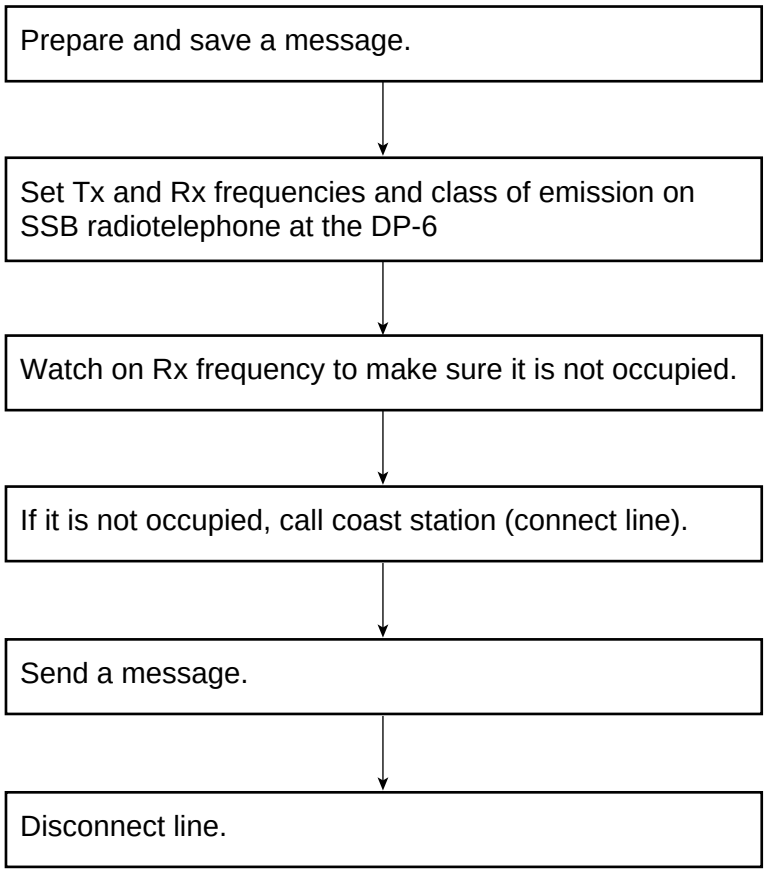
   Check above items referring to answerback code and ID number labels attached to the rack console.

2. Press the F6 key (SYSTEM). Confirm that the settings underlined are as below.



Confirm that the indication “Print” appears in inverse video on the screen to indicate that all transmit and receive messages are printed out. If not, press F1 6 (Real Time Printing). If you want to turn off this function (real time printing), press F1 6 again to erase the indication “Print” from the screen.

5.12 Basic Communications Procedure



5.13 Creating/Saving Messages

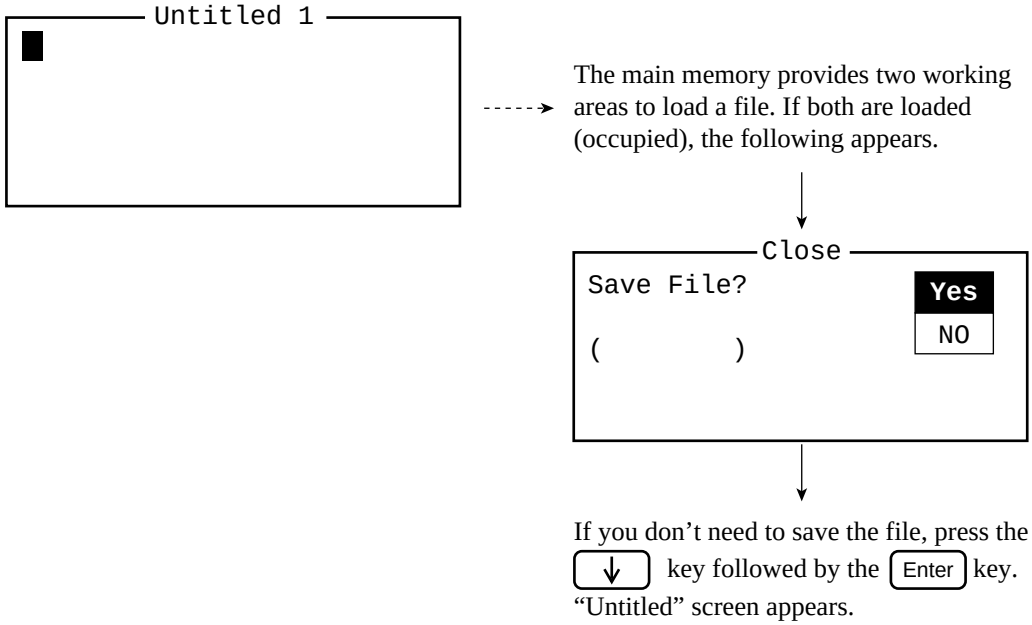
The DP-6 comes with one 3.5” floppy disk (2HD) for storage of messages.

Formatting floppy disks

The floppy disk which comes with the DP-6 has not been formatted. Format it by pressing F1 0 Enter. “Formatting completed” appears when formatting has been completed. Press the Esc key to return to the normal display screen.

Creating messages

1. Press F1 1 Enter.



2. Type your message. The Back Space key functions to delete the character to the left of the cursor. Use the Enter key to advance the cursor to the next line.
3. At the end of the message type KKKK or NNNN. This is a code meaning end of message.

Note: Three consecutive dollar signs ($$$) in a message (normally they are placed at the end of message) will automatically disconnect the communications line. In actual communications with a coast station, however, the transmitting station types some messages to the coast station after termination of file transmission. Then the communications line is disconnected manually. Therefore, this function is not available for communications with a coast station.

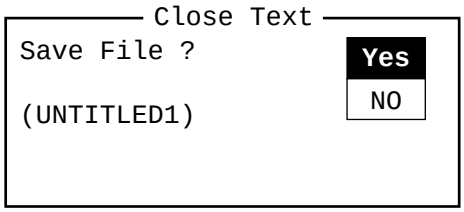
Saving messages

Once you have created a message you can attach a file name to it and save it to the floppy disk. A floppy disk stores 1.44 Mbytes of data.

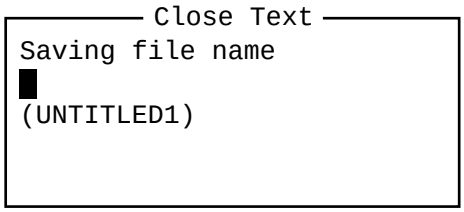
A message can be saved two ways: without losing your place on the editing screen (Save) or save it before clearing the editing screen (Close).

Save

1. Press F1 3.



2. Press the Enter key.



3. Enter file name (up to eight characters).

Example : FURUNO 1. TXT

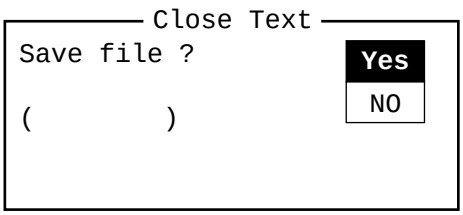
File Name

It is helpful to enter extension name to distinguish text file from macro file.

4. Press the Enter key.

You can close a file without saving it as follows:

1. Press F1 3.



2. Select “No” with the ↓ key.
3. Press the Enter key.

5.14 Transmitting Messages

Set up the DP-6 as follows to transmit a message to a coast station. Note that the frequency on the SSB radiotelephone should be set to other than 2182 kHz, otherwise the DP-6 can not control frequency on the radiotelephone.

Setting frequency

1. Press F3 0.

```
┌──── Set Frequency ────┐
│      Tx Freq :        │
│      Rx Freq :  0.00  │
└───────────────────────┘
```

2. Enter Tx frequency.
3. Press the ↓ key and enter Rx frequency.
4. Press the Enter key to set frequencies entered at step 2 and 3 on the SSB radiotelephone. (Class of emission is set for Telex.)

Watch on the Rx frequency to make sure it is not occupied. If not occupied proceed to "Calling" below.

Calling

5. Press F3 9.

```
┌──── Manual Calling ────┐
│ Mode : ARQ FEC DIRC CW │
│ ID   :                 │
└────────────────────────┘
```

6. Select communication mode ARQ.
7. Press the ↓ key and enter coast station's ID number (4 or 9 digits).
8. Press the Enter key to call station.

CONNECT and SEND appear in inverse video successively when communications line is established. In the ARQ mode answerback codes are mutually exchanged. An example of this is shown below:

```
 File Edit Operate Window  Station Terminal Editor System  WRU HR Over Break
-------------------------------------------------------- 1995-10-08 14:28  (JST) -------- Caps
 Station Name    :
 Frequency (T/R) :  8765.00 / 8965.00 (kHz) Comm Mode : ARQ
 Comm Status     : Connect  Send  Lock  Error
 Sending Volume  : 100 (%)   ARQ Error : 0  ARQ Time : 0 (sec)
-------------------------------------------------------------------------------------------------
```

```
12345 FURU ×  ..... Your Ship s Answerback Code
2361 JOS J
MON           ..... Messages from Coast Station (Nagasaki)
GA+?
```

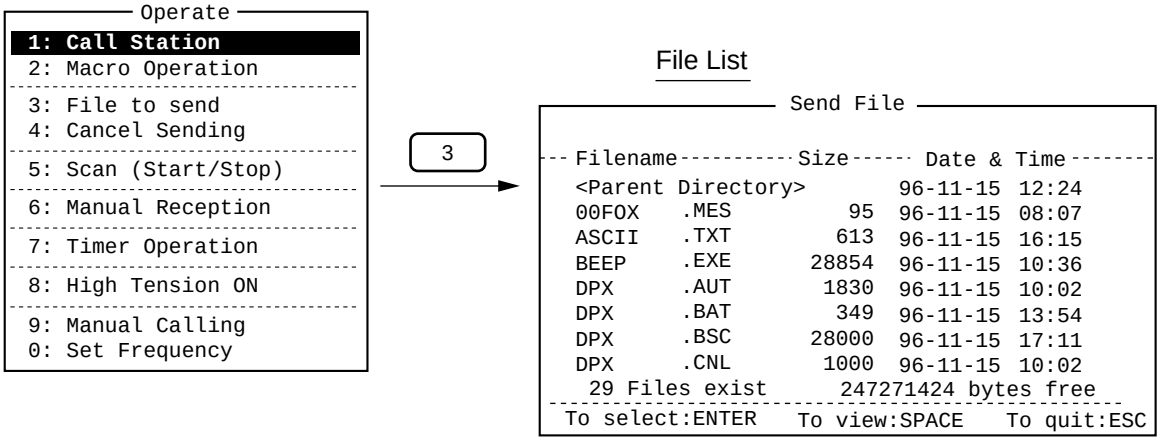
Example of Answerback Code Exchange

Transmitting messages
(Refer to page 5-30 for actual communications)

9. Communicate with coast station (type command and some messages) through the keyboard when you receive “GA+”.

10. To transmit a file stored in the memory, press [F3] [3] to display file list, select a file to send, then press the [Enter] key.

When the [3] key is pressed:



11. After sending a file (message), communicate with coast station (type some messages) through the keyboard and then press the [F10] key to disconnect the communications line.

Note: In the ARQ mode you can request immediate confirmation of your message by pressing the [F9] (OVER) key. This action restores the “SEND” indication (not highlighted) and your station becomes the receiving station.

5.15 Actual Communications

After connection is established with a coast station (on ARQ mode), communications begin as below, in order to send a message to a land subscriber via the coast station. For abbreviated terms, refer to page 5-33.

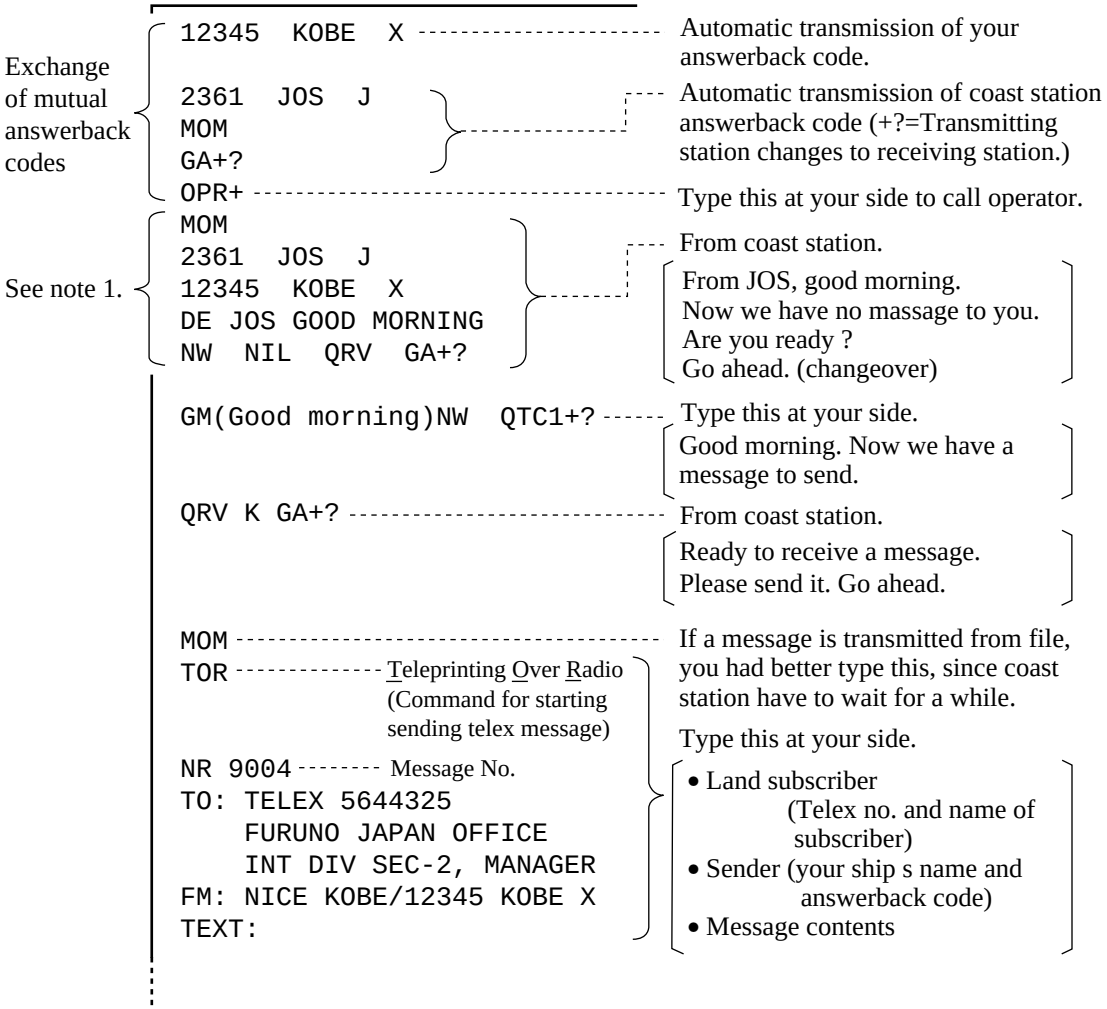
(ex)

Ship Name : NICE KOBE
Selcall No. : 12345
Answerback Code : 12345 KOBE X

Coast Station : Nagasaki Coast Station
Selcall No. : 2361
Answerback Code : 2361 JOS J

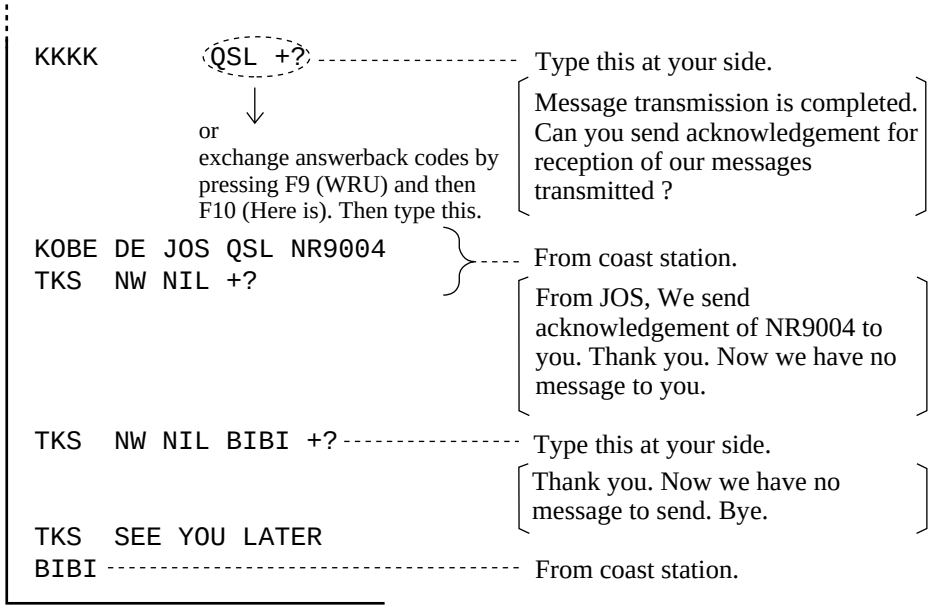
Land Subscriber : FURUNO JAPAN OFFICE INTERNATIONAL DIVISION SECTION-2, MANAGER
Telex No. : 5644325
Answerback Code : 5644325 FURUNO J

<u>Example of Manual Communications</u> (After connection is established.)



(continued on next page)

(from previous page)



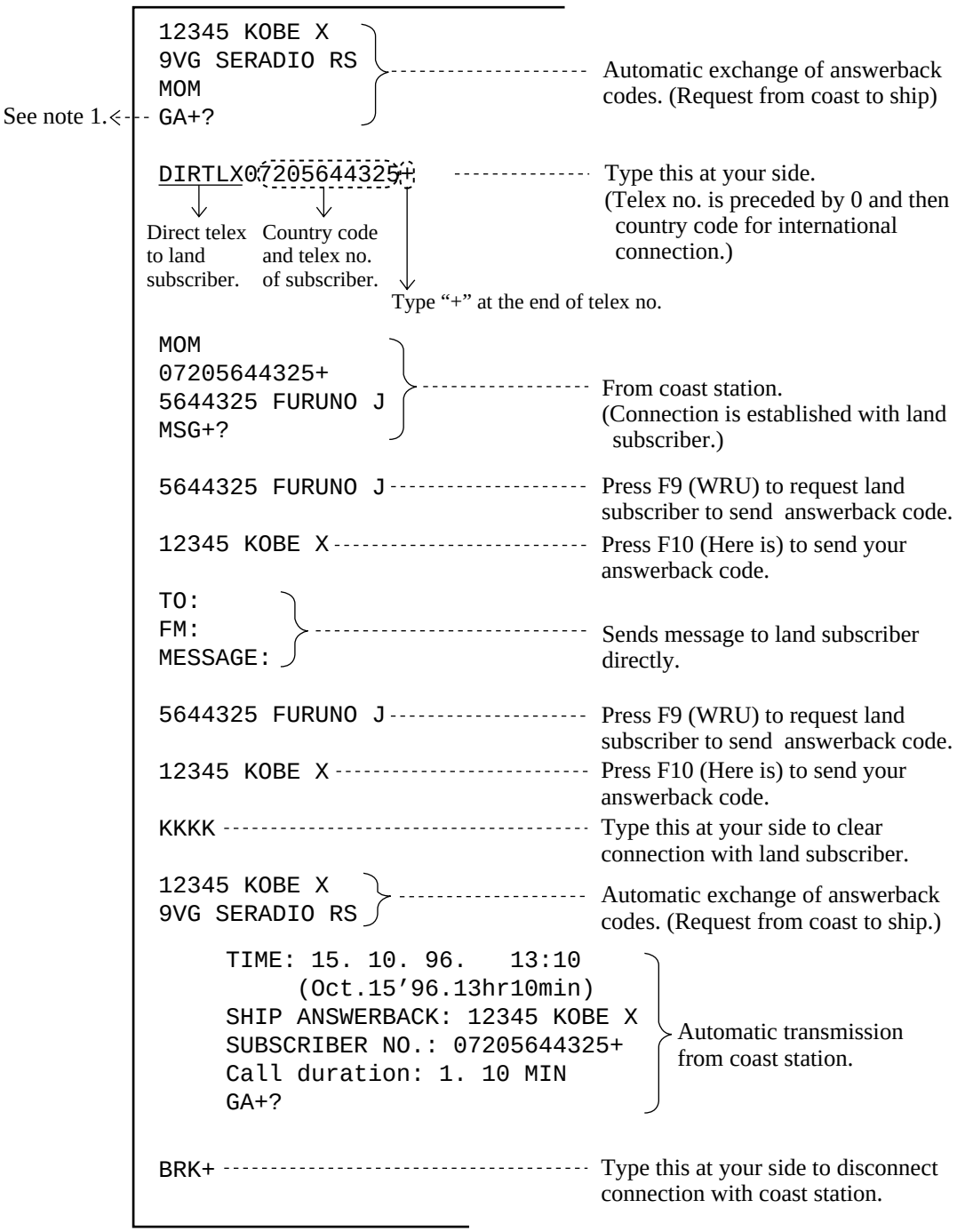
Connection is disconnected by the coast station. (If you want to disconnect connection at your side, press the F10 (Break) key.)

Note 1: When you call a coast station for the first time, it requires you to give your ship's name, selcall no., call sign and AAIC (accounting authority) to register you with its computer. Reply correctly. Then, follow instructions of the coast station. (After registration, automatic communications (both Tx and Rx) may be available as long as your answerback code is correctly registered on the DP-6. Refer to the next page for automatic communications.)

Note 2: If wrong character is entered (typed), type XXXXX (five X characters) and type correct character.

Example of Automatic Communications (not available for Nagasaki station)

Coast station : Singapore Coast Station
Selcall No. : 4620
Answerback Code : 9VG SERADIO RS



Note 1: If there is telex traffic on hand (in the coast station) , "MESSAGE AVAILABLE. PLEASE USE MSG+" appears instead of "GA+?". If so, type MSG+ on the next line to receive a message from land subscriber through coast station.

List of Abbreviations

Abbreviation	Question	Answer or Advice
QRA	What is the name of your vessel (or station)?	The name of my vessel (or station) is ...
QRC	By what private enterprise (or state administration) are the accounts for charges for your station settled?	The accounts for charges of my station are settled by the private enterprise ... (or state administration).
QRU	Have you anything for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRX	When will you call me again?	I will call you again at ... hours on ... kHz (or MHz).
QSJ	What is the charge to be collected to... including your internal charge?	The charge to be collected to ... including my internal charge is ... francs.
QSL	Can you acknowledge receipt?	I am acknowledging receipt.
QSX	Will you listen to ... (name and/or call sign(s)) on ... kHz (or MHz), or in the bands .../ channels ...?	I am listening to ... (name and/or call sign(s)) on ... kHz (or MHz), or in the bands .../ channels ...
QTC	How many telegrams have you to send?	I have ... telegrams for you (or for ... (name and/or call sign)).
QTU	What are the hours during which your station is open?	My station is open from ... to ... hours.

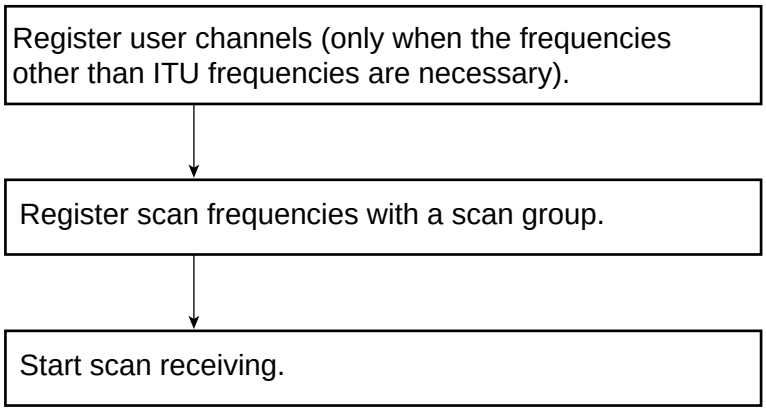
Abbreviation or Signal	Definition
BK	Signal used to interrupt a transmission in progress.
CFM	Confirm (or I confirm).
DE	“From ...” (used to precede the name or other identification of the calling station).
K	Invitation to transmit.
NIL	I have nothing to send to you.
NW	Now.
PSE	Please.
R	Received.
REF	Reference to ... (or Refer to ...).
RPT	Repeat (or I repeat) (or Repeat ...).
SVC	Prefix indicating a service telegram.

Commands and Abbreviations

Command	Meaning
TGM+	Telegram. Automatic transmission of telegram to coast station.
MSG+	Message. Automatic reception of telegram from coast station.
OPR+	Operator. Operator call (Manual communications).
URG+	Urgent. Urgent call.
MED+	Medicine. Call relative to medicine (Medical call).
TEST+	Test. Requests coast station to send test message (QBF messages).
BRK+	Break. Disconnects connection with coast station. This is only available for automatic communications.
HELP+	Help. Requests coast station to send information of service operating procedure.
Abbreviation	
GA+?	Go Ahead. I am ready to receive your command (message). Please send it.
MOM	Moment. (Wait a moment.)
MSG+?	Message. Please send a message.
KKKK	Termination of message transmitted. This should be typed at the end of message.

5.16 Other Features (Helpful Functions)

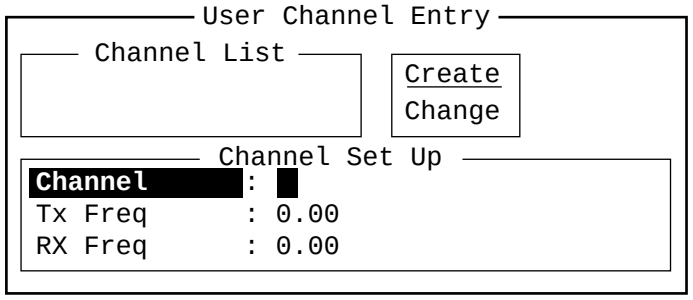
1. Scan receiving



Registering user channels

100 user channels (private frequencies) can be registered.

1. Press F5 4 .



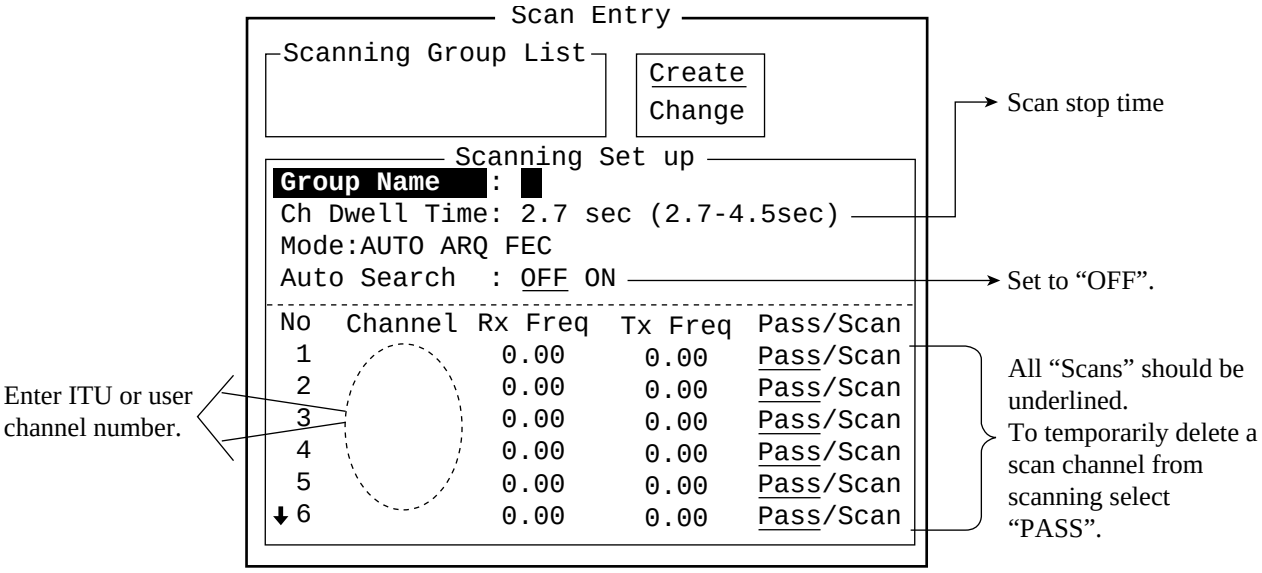
When a user channel is already registered, "Change" is underlined. If so, press the →, ↑ to move the underline to "Create" and then press the Enter key to get the screen shown left.

2. Enter channel number (0 to 99).
3. Press the ↓ key and enter Tx frequency.
4. Press the ↓ key and enter Rx frequency.
5. Press the Enter key twice.
6. Press the Esc key to return to the normal display screen.

Registering scan frequencies (with a scan group)

Ten scan groups can be programmed and each group can have 20 channels (ITU and/or user channels). ITU channels for 4 MHz to 8 MHz band and 12 MHz to 25 MHz bands are entered 3 and 4 digits respectively. For example, enter 401 for ch 2 on 4MHz band and 1201 for ch 1 on 12 MHz band.

1. Press [F5] [3].



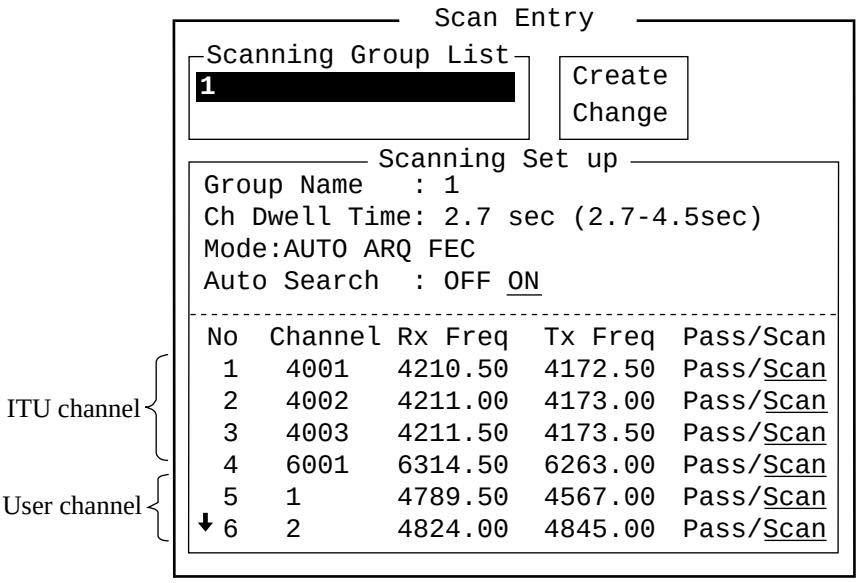
2. Type in scan group name.
3. Press the [↓] key and enter channel dwell time (scan stop time); 2.7-4.5. The recommended setting is 4.5 sec.
4. Press the [↓] Key to advance the cursor to Mode, and then select the communication mode; AUTO, ARQ or FEC.

Note: To register the Scanning Channel Groupe for ARQ, select ARQ. For FEC, select FEC.

AUTO is used to register scanning channel groupe when both ARQ and FEC exist in the same Scanning Channel groupe.

5. Press the [↓] key to select Auto Search. Confirm that it is set to "OFF".
6. Press the [↓] key and enter ITU or user channel.
7. Press the [→] key to underline SCAN.
8. Enter scan frequency following steps 6 and 7. You may enter 20 frequencies.

9. Press the Enter key twice to register scan frequencies with a scan group. The following screen appears.



10. Press the Esc key to return to the normal display screen.

Starting scanning

1. Press F3 5.
2. Select scan group desired and press the Enter key.

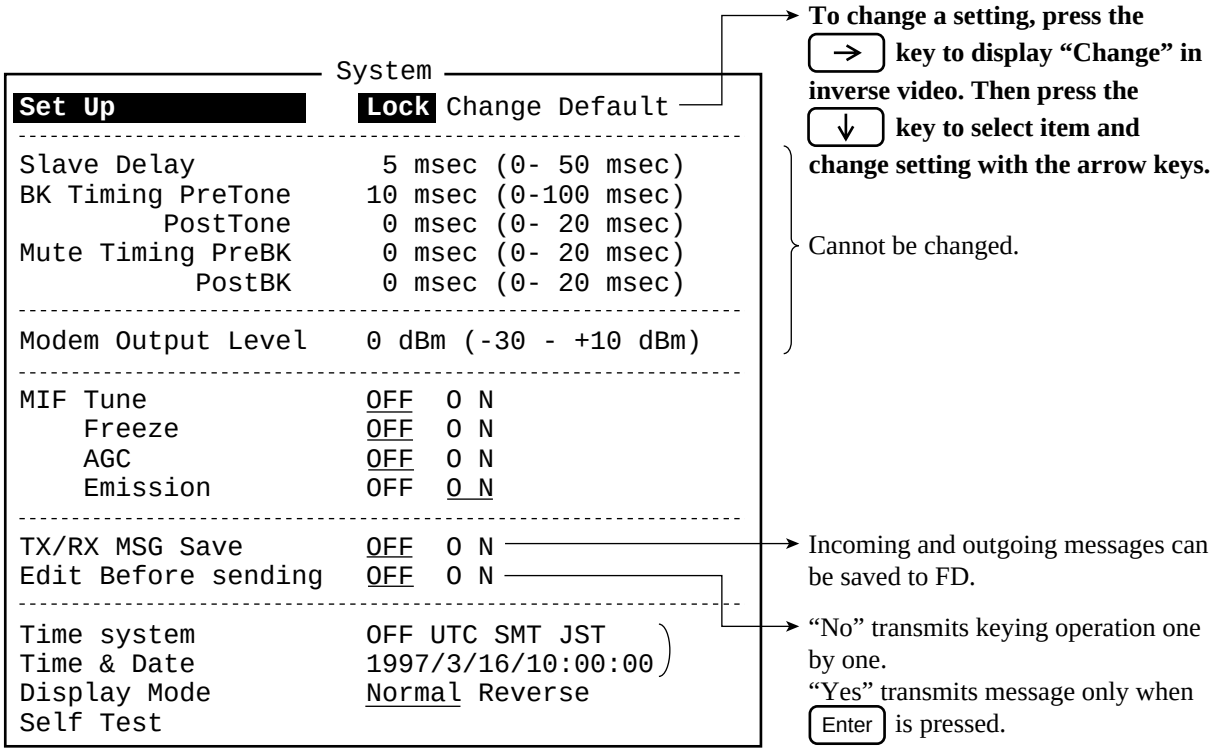
Scanning can be stopped by pressing F3 5.

2. Retrieving files

1. Press F1 2.
2. Select a file to retrieve and press the Enter key.

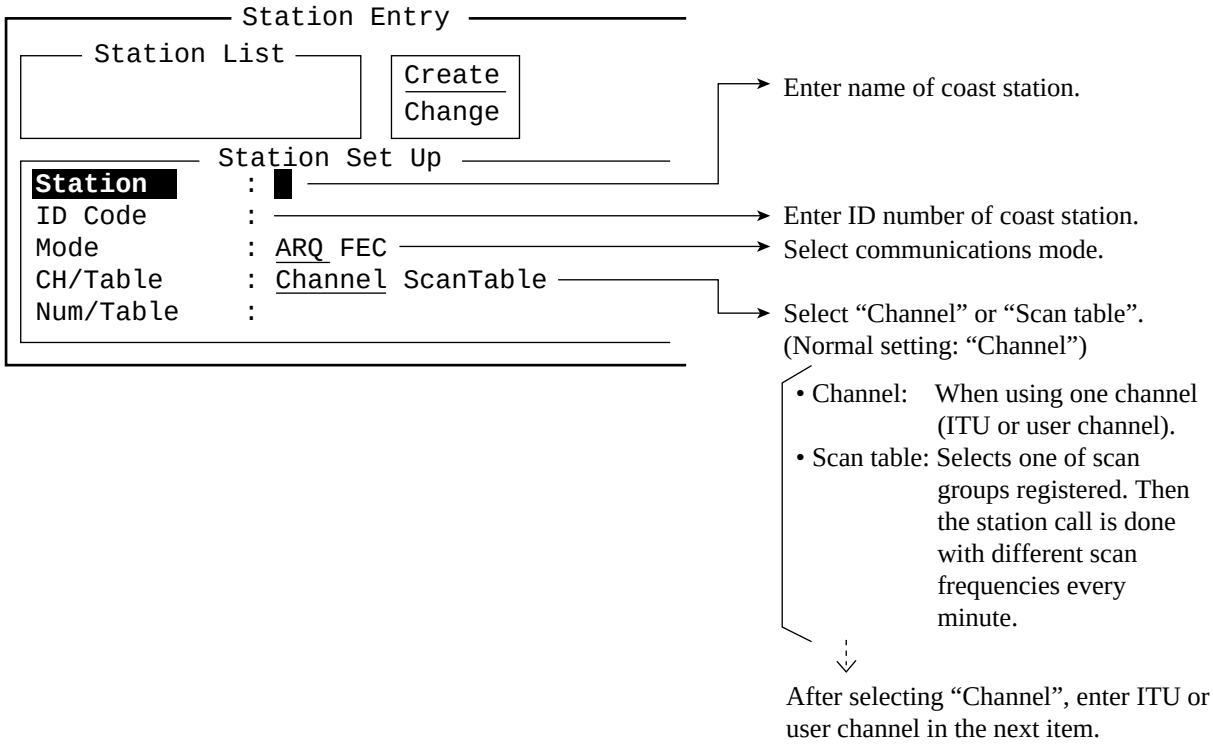
3. SYSTEM menu

The SYSTEM menu may be displayed by pressing the F6 key.

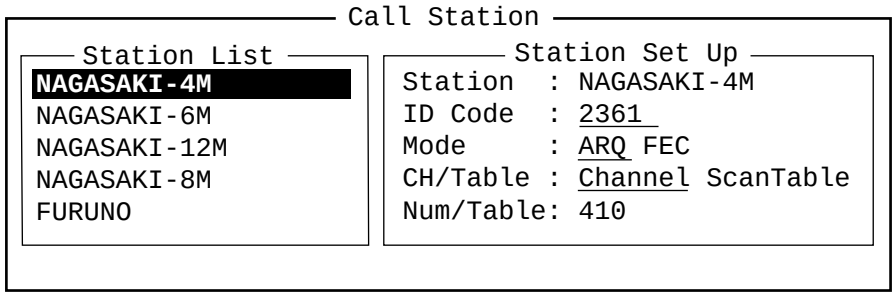


4. Programming station list and calling a station

1. Press F5 1.



2. Set each item and then press the Enter key twice.
3. Press the Esc key.
4. Press F3 1.



5. Select station with the arrow keys.
6. Press the Enter key to call station.

FURUNO ITU TELEX FREQUENCY TABLE (effective from July 1, 1991, 1991年7月1日より発効)

4 MHz BAND			6 MHz BAND			8 MHz BAND			12 MHz BAND			16 MHz BAND			18/19 MHz BAND			22 MHz BAND			25/26 MHz BAND		
No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX
4001	4172.5	4210.5	6001	6263.0	6314.5	8001	8376.5	8376.5	12001	12477.0	12579.5	16001	16683.5	16807.0	18001	18870.5	19681.0	22001	22284.5	22376.5	25001	25173.0	26101.0
4002	4173.0	4211.0	6002	6263.5	6315.0	8002	8377.0	8417.0	12002	12477.5	12580.0	16002	16684.0	16807.5	18002	18871.0	19681.5	22002	22285.0	22377.0	25002	25173.5	26101.5
4003	4173.5	4211.5	6003	6264.0	6315.5	8003	8377.5	8417.5	12003	12478.0	12580.5	16003	16684.5	16808.0	18003	18871.5	19682.0	22003	22285.5	22377.5	25003	25174.0	26102.0
4004	4174.0	4212.0	6004	6264.5	6316.0	8004	8378.0	8418.0	12004	12478.5	12581.0	16004	16685.0	16808.5	18004	18872.0	19682.5	22004	22286.0	22378.0	25004	25174.5	26102.5
4005	4174.5	4212.5	6005	6265.0	6316.5	8005	8378.5	8418.5	12005	12479.0	12581.5	16005	16685.5	16809.0	18005	18872.5	19683.0	22005	22286.5	22378.5	25005	25175.0	26103.0
4006	4175.0	4213.0	6006	6265.5	6317.0	8006	8379.0	8419.0	12006	12479.5	12582.0	16006	16686.0	16809.5	18006	18873.0	19683.5	22006	22287.0	22379.0	25006	25175.5	26103.5
4007	4175.5	4213.5	6007	6266.0	6317.5	8007	8379.5	8419.5	12007	12480.0	12582.5	16007	16686.5	16810.0	18007	18873.5	19684.0	22007	22287.5	22379.5	25007	25176.0	26104.0
4008	4176.0	4214.0	6008	6266.5	6318.0	8008	8380.0	8420.0	12008	12480.5	12583.0	16008	16687.0	16810.5	18008	18874.0	19684.5	22008	22288.0	22380.0	25008	25176.5	26104.5
4009	4176.5	4214.5	6009	6267.0	6318.5	8009	8380.5	8420.5	12009	12481.0	12583.5	16009	16687.5	16811.0	18009	18874.5	19685.0	22009	22288.5	22380.5	25009	25177.0	26105.0
4010	4177.0	4215.0	6010	6267.5	6319.0	8010	8381.0	8421.0	12010	12481.5	12584.0	16010	16688.0	16811.5	18010	18875.0	19685.5	22010	22289.0	22381.0	25010	25177.5	26105.5
4011	4177.5	4177.5	6011	6268.0	6268.0	8011	8381.5	8421.5	12011	12482.0	12584.5	16011	16688.5	16812.0	18011	18875.5	19686.0	22011	22289.5	22381.5	25011	25178.0	26106.0
4012	4178.0	4215.5	6012	6268.5	6319.5	8012	8382.0	8422.0	12012	12482.5	12585.0	16012	16689.0	16812.5	18012	18876.0	19686.5	22012	22290.0	22382.0	25012	25178.5	26106.5
4013	4178.5	4216.0	6013	6269.0	6320.0	8013	8382.5	8422.5	12013	12483.0	12585.5	16013	16689.5	16813.0	18013	18876.5	19687.0	22013	22290.5	22382.5	25013	25179.0	26107.0
4014	4179.0	4216.5	6014	6269.5	6320.5	8014	8383.0	8423.0	12014	12483.5	12586.0	16014	16690.0	16813.5	18014	18877.0	19687.5	22014	22291.0	22383.0	25014	25179.5	26107.5
4015	4179.5	4217.0	6015	6270.0	6321.0	8015	8383.5	8423.5	12015	12484.0	12586.5	16015	16690.5	16814.0	18015	18877.5	19688.0	22015	22291.5	22383.5	25015	25180.0	26108.0
4016	4180.0	4217.5	6016	6270.5	6321.5	8016	8384.0	8424.0	12016	12484.5	12587.0	16016	16691.0	16814.5	18016	18878.0	19688.5	22016	22292.0	22384.0	25016	25180.5	26108.5
4017	4180.5	4218.0	6017	6271.0	6322.0	8017	8384.5	8424.5	12017	12485.0	12587.5	16017	16691.5	16815.0	18017	18878.5	19689.0	22017	22292.5	22384.5	25017	25181.0	26109.0
4018	4181.0	4218.5	6018	6271.5	6322.5	8018	8385.0	8425.0	12018	12485.5	12588.0	16018	16692.0	16815.5	18018	18879.0	19689.5	22018	22293.0	22385.0	25018	25181.5	26109.5
4019	4181.5	4219.0	6019	6272.0	6323.0	8019	8385.5	8425.5	12019	12486.0	12588.5	16019	16692.5	16816.0	18019	18879.5	19690.0	22019	22293.5	22385.5	25019	25182.0	26110.0
4020	4202.5	4202.5	6020	6272.5	6323.5	8020	8386.0	8426.0	12020	12486.5	12589.0	16020	16693.0	16816.5	18020	18880.0	19690.5	22020	22294.0	22386.0	25020	25182.5	26110.5
4021	4203.0	4203.0	6021	6273.0	6324.0	8021	8386.5	8426.5	12021	12487.0	12589.5	16021	16693.5	16817.0	18021	18880.5	19691.0	22021	22294.5	22386.5	25021	25183.0	26111.0
4022	4203.5	4203.5	6022	6273.5	6324.5	8022	8387.0	8427.0	12022	12487.5	12590.0	16022	16694.0	16817.5	18022	18881.0	19691.5	22022	22295.0	22387.0	25022	25183.5	26111.5
4023	4204.0	4204.0	6023	6274.0	6325.0	8023	8387.5	8427.5	12023	12488.0	12590.5	16023	16694.5	16818.0	18023	18881.5	19692.0	22023	22295.5	22387.5	25023	25184.0	26112.0
4024	4204.5	4204.5	6024	6274.5	6325.5	8024	8388.0	8428.0	12024	12488.5	12591.0	16024	16695.0	16695.0	18024	18882.0	19692.5	22024	22296.0	22388.0	25024	25184.5	26112.5
4025	4205.0	4205.0	6025	6275.0	6326.0	8025	8388.5	8428.5	12025	12489.0	12591.5	16025	16695.5	16818.5	18025	18882.5	19693.0	22025	22296.5	22388.5	25025	25185.0	26113.0
4026	4205.5	4205.5	6026	6275.5	6326.5	8026	8389.0	8429.0	12026	12489.5	12592.0	16026	16696.0	16819.0	18026	18883.0	19693.5	22026	22297.0	22389.0	25026	25185.5	26113.5
4027	4206.0	4206.0	6027	6281.0	6327.0	8027	8389.5	8429.5	12027	12490.0	12592.5	16027	16696.5	16819.5	18027	18883.5	19694.0	22027	22297.5	22389.5	25027	25186.0	26114.0
4028	4206.5	4206.5	6028	6281.5	6327.5	8028	8390.0	8430.0	12028	12490.5	12593.0	16028	16697.0	16820.0	18028	18884.0	19694.5	22028	22298.0	22390.0	25028	25186.5	26114.5
4029	4207.0	4207.0	6029	6282.0	6328.0	8029	8390.5	8430.5	12029	12491.0	12593.5	16029	16697.5	16820.5	18029	18884.5	19695.0	22029	22298.5	22390.5	25029	25187.0	26115.0
4030	4207.5	4207.5	6030	6282.5	6328.5	8030	8391.0	8431.0	12030	12491.5	12594.0	16030	16698.0	16821.0	18030	18885.0	19695.5	22030	22299.0	22391.0	25030	25187.5	26115.5
4031	4208.0	4219.5	6031	6283.0	6329.0	8031	8391.5	8431.5	12031	12492.0	12594.5	16031	16698.5	16821.5	18031	18885.5	19696.0	22031	22299.5	22391.5	25031	25188.0	26116.0
4032	4208.5	4220.0	6032	6283.5	6329.5	8032	8392.0	8432.0	12032	12492.5	12595.0	16032	16699.0	16822.0	18032	18886.0	19696.5	22032	22300.0	22392.0	25032	25188.5	26116.5
4033	4209.0	4220.5	6033	6284.0	6330.0	8033	8392.5	8432.5	12033	12493.0	12595.5	16033	16699.5	16822.5	18033	18886.5	19697.0	22033	22300.5	22392.5	25033	25189.0	26117.0
			6034	6284.5	6330.5	8034	8393.0	8433.0	12034	12493.5	12596.0	16034	16700.0	16823.0	18034	18887.0	19697.5	22034	22301.0	22393.0	25034	25189.5	26117.5
			6035	6300.5	6300.5	8035	8393.5	8433.5	12035	12494.0	12596.5	16035	16700.5	16823.5	18035	18887.5	19698.0	22035	22301.5	22393.5	25035	25190.0	26118.0
			6036	6301.0	6301.0	8036	8394.0	8434.0	12036	12494.5	12597.0	16036	16701.0	16824.0	18036	18888.0	19698.5	22036	22302.0	22394.0	25036	25190.5	26118.5
			6037	6301.5	6301.5	8037	8394.5	8434.5	12037	12495.0	12597.5	16037	16701.5	16824.5	18037	18888.5	19699.0	22037	22302.5	22394.5	25037	25191.0	26119.0
			6038	6302.0	6302.0	8038	8395.0	8435.0	12038	12495.5	12598.0	16038	16702.0	16825.0	18038	18889.0	19699.5	22038	22303.0	22395.0	25038	25191.5	26119.5
			6039	6302.5	6302.5	8039	8395.5	8435.5	12039	12496.0	12598.5	16039	16702.5	16825.5	18039	18889.5	19700.0	22039	22303.5	22395.5	25039	25192.0	26120.0
			6040	6303.0	6303.0	8040	8396.0	8436.0	12040	12496.5	12599.0	16040	16703.0	16826.0	18040	18890.0	19700.5	22040	22304.0	22396.0	25040	25192.5	26120.5
			6041	6303.5	6303.5	8041	8396.5	8396.5	12041	12497.0	12599.5	16041	16703.5	16826.5	18041	18890.5	19701.0	22041	22304.5	22396.5	25041	25193.0	25193.0
			6042	6304.0	6304.0	8042	8397.0	8397.0	12042	12497.5	12600.0	16042	16704.0	16827.0	18042	18891.0	19701.5	22042	22305.0	22397.0	25042	25193.5	25193.5
			6043	6304.5	6304.5	8043	8397.5	8397.5	12043	12498.0	12600.5	16043	16704.5	16827.5	18043	18891.5	19702.0	22043	22305.5	22397.5	25043	25194.0	25194.0
			6044	6305.0	6305.0	8044	8398.0	8398.0	12044	12498.5	12601.0	16044	16705.0	16828.0	18044	18892.0	19702.5	22044	22306.0	22398.0	25044	25194.5	25194.5
			6045	6305.5	6305.5	8045	8398.5	8398.5	12045	12499.0	12601.5	16045	16705.5	16828.5	18045	18892.5	19703.0	22045	22306.5	22398.5	25045	25195.0	25195.0
			6046	6306.0	6306.0	8046	8399.0	8399.0	12046	12499.5	12602.0	16046	16706.0	16829.0	18046	18893.0	18893.0	22046	22307.0	22399.0	25046	25195.5	25195.5
			6047	6306.5	6306.5	8047	8399.5	8399.5	12047	12500.0	12602.5	16047	16706.5	16829.5	18047	18893.5	18893.5	22047	22307.5	22399.5	25047	25196.0	25196.0
			6048	6307.0	6307.0	8048	8400.0	8400.0	12048	12500.5	12603.0	16048	16707.0	16830.0	18048	18894.0	18894.0	22048	22308.0	22400.0	25048	25196.5	25196.5
			6049	6307.5	6307.5	8049	8400.5	8400.5	12049	12501.0	12603.5	16049	16707.5	16830.5	18049	18894.5	18894.5	22049	22308.5	22400.5	25049	25197.0	25197.0
			6050	6308.0	6308.0	8050	8401.0	8401.0	12050	12501.5	12604.0	16050	16708.0	16831.0	18050	18895.0	18895.0	22050	22309.0	22401.0	25050	25197.5	25197.5
			6051	6308.5	6308.5	8051	8401.5	8401.5	12051	12502.0	12604.5	16051	16708.5	16831.5	18051	18895.5	18895.5	22051	22309.5	22401.5	25051	25198.0	25198.0
			6052	6309.0	6309.0	8052	8402.0	8402.0	12052	12502.5	12605.0	16052	16709.0	16832.0	18052	18896.0	18896.0	22052	22310.0	22402.0	25052	25198.5	25198.5
			6053	6309.5	6309.5	8053	8402.5	8402.5	12053	12503.0	12605.5	16053	16709.5	16832.5	18053	18896.5	18896.5	22053	22310.5	22402.5	25053	25199.0	25199.0
			6054	6310.0	6310.0	8054	8403.0	8403.0	12054	12503.5	12606.0	16054	16710.0	16833.0	18054	18897.0	18897.0	22054	22311.0	22403.0	25054	25199.5	25199.5
			6055	6310.5	6310.5	8055	8403.5	8403.5	12055	12504.0	12606.5	16055	16710.5	16833.5	18055	18897.5	18897.5	22055	22311.5	22403.5	25055	25200.0	25200.0

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			6056	6311.0	6311.0	8056	8404.0	8404.0	12056	12504.5	12607.0	16056	16711.0	16834.0	18056	18898.0	18898.0	22056	22312.0	22404.0	25056	25200.5	25200.5
			6057	6311.5	6311.5	8057	8404.5	8404.5	12057	12505.0	12607.5	16057	16711.5	16834.5	18057	18898.5	19703.5	22057	22312.5	22404.5	25057	25201.0	25201.0
			6058	6312.0	6312.0	8058	8405.0	8405.0	12058	12505.5	12608.0	16058	16712.0	16835.0	18058	18899.0	19704.0	22058	22313.0	22405.0	25058	25201.5	25201.5
			6059	6312.5	6331.0	8059	8405.5	8405.5	12059	12506.0	12608.5	16059	16712.5	16835.5	18059	18899.5	19704.5	22059	22313.5	22405.5	25059	25202.0	25202.0
			6060	6313.0	6331.5	8060	8406.0	8406.0	12060	12506.5	12609.0	16060	16713.0	16836.0				22060	22314.0	22406.0	25060	25202.5	25202.5
			6061	6313.5	6332.0	8061	8406.5	8406.5	12061	12507.0	12609.5	16061	16713.5	16836.5				22061	22314.5	22406.5	25061	25203.0	25203.0
						8062	8407.0	8407.0	12062	12507.5	12610.0	16062	16714.0	16837.0				22062	22315.0	22407.0	25062	25203.5	25203.5
						8063	8407.5	8407.5	12063	12508.0	12610.5	16063	16714.5	16837.5				22063	22315.5	22407.5	25063	25204.0	25204.0
						8064	8408.0	8408.0	12064	12508.5	12611.0	16064	16715.0	16838.0				22064	22316.0	22408.0	25064	25204.5	25204.5
						8065	8408.5	8408.5	12065	12509.0	12611.5	16065	16715.5	16838.5				22065	22316.5	22408.5	25065	25205.0	25205.0
						8066	8409.0	8409.0	12066	12509.5	12612.0	16066	16716.0	16839.0				22066	22317.0	22409.0	25066	25205.5	25205.5
						8067	8409.5	8409.5	12067	12510.0	12612.5	16067	16716.5	16839.5				22067	22317.5	22409.5	25067	25206.0	25206.0
						8068	8410.0	8410.0	12068	12510.5	12613.0	16068	16717.0	16840.0				22068	22318.0	22410.0	25068	25206.5	25206.5
						8069	8410.5	8410.5	12069	12511.0	12613.5	16069	16717.5	16840.5				22069	22318.5	22410.5	25069	25207.0	25207.0
						8070	8411.0	8411.0	12070	12511.5	12614.0	16070	16718.0	16841.0				22070	22319.0	22411.0	25070	25207.5	25207.5
						8071	8411.5	8411.5	12071	12512.0	12614.5	16071	16718.5	16841.5				22071	22319.5	22411.5	25071	25208.0	25208.0
						8072	8412.0	8412.0	12072	12512.5	12615.0	16072	16719.0	16842.0				22072	22320.0	22412.0	25072	25208.5	26121.0
						8073	8412.5	8412.5	12073	12513.0	12615.5	16073	16719.5	16842.5				22073	22320.5	22412.5	25073	25209.0	26121.5
						8074	8413.0	8413.0	12074	12513.5	12616.0	16074	16720.0	16843.0				22074	22321.0	22413.0	25074	25209.5	26122.0
						8075	8413.5	8413.5	12075	12514.0	12616.5	16075	16720.5	16843.5				22075	22321.5	22413.5			
						8076	8414.0	8414.0	12076	12514.5	12617.0	16076	16721.0	16844.0				22076	22322.0	22414.0			
						8077	8414.5	8414.5	12077	12515.0	12617.5	16077	16721.5	16844.5				22077	22322.5	22414.5			
						8078	8415.0	8436.5	12078	12515.5	12618.0	16078	16722.0	16845.0				22078	22323.0	22415.0			
						8079	8415.5	8437.0	12079	12516.0	12618.5	16079	16722.5	16845.5				22079	22323.5	22415.5			
						8080	8416.0	8437.5	12080	12516.5	12619.0	16080	16723.0	16846.0				22080	22324.0	22416.0			
									12081	12517.0	12619.5	16081	16723.5	16846.5				22081	22324.5	22416.5			
									12082	12517.5	12620.0	16082	16724.0	16847.0				22082	22325.0	22417.0			
									12083	12518.0	12620.5	16083	16724.5	16847.5				22083	22325.5	22417.5			
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									12085	12519.0	12621.5	16085	16725.5	16848.5				22085	22326.5	22418.5			
									12086	12519.5	12622.0	16086	16726.0	16849.0				22086	22327.0	22419.0			
									12087	12520.0	12520.0	16087	16726.5	16849.5				22087	22327.5	22419.5			
									12088	12520.5	12622.5	16088	16727.0	16850.0				22088	22328.0	22420.0			
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									12091	12522.0	12624.0	16091	16728.5	16851.5				22091	22329.5	22421.5			
									12092	12522.5	12624.5	16092	16729.0	16852.0				22092	22330.0	22422.0			
									12093	12523.0	12625.0	16093	16729.5	16852.5				22093	22330.5	22422.5			
									12094	12523.5	12625.5	16094	16730.0	16853.0				22094	22331.0	22423.0			
									12095	12524.0	12626.0	16095	16730.5	16853.5				22095	22331.5	22423.5			
									12096	12524.5	12626.5	16096	16731.0	16854.0				22096	22332.0	22424.0			
									12097	12525.0	12627.0	16097	16731.5	16854.5				22097	22332.5	22424.5			
									12098	12525.5	12627.5	16098	16732.0	16855.0				22098	22333.0	22425.0			
									12099	12526.0	12628.0	16099	16732.5	16855.5				22099	22333.5	22425.5			
									12100	12526.5	12628.5	16100	16733.0	16856.0				22100	22334.0	22426.0			
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									12102	12527.5	12629.5	16102	16739.0	16857.0				22102	22335.0	22427.0			
									12103	12528.0	12630.0	16103	16739.5	16857.5				22103	22335.5	22427.5			
									12104	12528.5	12630.5	16104	16740.0	16858.0				22104	22336.0	22428.0			
									12105	12529.0	12631.0	16105	16740.5	16858.5				22105	22336.5	22428.5			
									12106	12529.5	12631.5	16106	16741.0	16859.0				22106	22337.0	22429.0			
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									12109	12531.0	12633.0	16109	16742.5	16860.5				22109	22338.5	22430.5			
									12110	12531.5	12633.5	16110	16743.0	16861.0				22110	22339.0	22431.0			
									12111	12532.0	12634.0	16111	16743.5	16861.5				22111	22339.5	22431.5			
									12112	12532.5	12634.5	16112	16744.0	16862.0				22112	22340.0	22432.0			
									12113	12533.0	12635.0	16113	16744.5	16862.5				22113	22340.5	22432.5			
									12114	12533.5	12635.5	16114	16745.0	16863.0				22114	22341.0	22433.0			
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									12117	12535.0	12637.0	16117	16746.5	16864.5				22117	22342.5	22434.5									
									12118	12535.5	12637.5	16118	16747.0	16865.0				22118	22343.0	22435.0									
									12119	12536.0	12638.0	16119	16747.5	16865.5				22119	22343.5	22435.5									
									12120	12536.5	12638.5	16120	16748.0	16866.0				22120	22344.0	22436.0									
									12121	12537.0	12639.0	16121	16748.5	16866.5				22121	22344.5	22436.5									
									12122	12537.5	12639.5	16122	16749.0	16867.0				22122	22345.0	22437.0									
									12123	12538.0	12640.0	16123	16749.5	16867.5				22123	22345.5	22437.5									
									12124	12538.5	12640.5	16124	16750.0	16868.0				22124	22346.0	22438.0									
									12125	12539.0	12641.0	16125	16750.5	16868.5				22125	22346.5	22438.5									
									12126	12539.5	12641.5	16126	16751.0	16869.0				22126	22347.0	22439.0									
									12127	12540.0	12642.0	16127	16751.5	16869.5				22127	22347.5	22439.5									
									12128	12540.5	12642.5	16128	16752.0	16870.0				22128	22348.0	22440.0									
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									12173	12568.0	12568.0	16173	16774.5	16892.5				22173	22370.5	22370.5									
									12174	12568.5	12568.5	16174	16775.0	16893.0				22174	22371.0	22371.0									
									12175	12569.0	12569.0	16175	16775.5	16893.5				22175	22371.5	22371.5									

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12190	12576.5	12576.5
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12192	12577.5	12657.0
12193	12578.0	12657.5
12194	12578.5	12658.0

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16181	16778.5	16896.5
16182	16779.0	16897.0
16183	16779.5	16897.5
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16197	16786.5	16786.5
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16200	16788.0	16788.0
16201	16788.5	16788.5
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16209	16792.5	16792.5
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16212	16794.0	16794.0
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16214	16795.0	16795.0
16215	16795.5	16795.5
16216	16796.0	16796.0
16217	16796.5	16796.5
16218	16797.0	16797.0
16219	16797.5	16797.5
16220	16798.0	16798.0
16221	16798.5	16798.5
16222	16799.0	16799.0
16223	16799.5	16799.5
16224	16800.0	16800.0
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16226	16801.0	16801.0
16227	16801.5	16801.5
16228	16802.0	16802.0
16229	16802.5	16802.5
16230	16803.0	16803.0
16231	16803.5	16803.5
16232	16804.0	16804.0
16233	16804.5	16804.5
16234	16805.0	16903.0
16235	16805.5	16903.5
16236	16806.0	16904.0

22176	22372.0	22372.0
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22181	22374.5	22444.0
22182	22375.0	22444.5
22183	22375.5	22445.0

Chapter 6 Inmarsat C

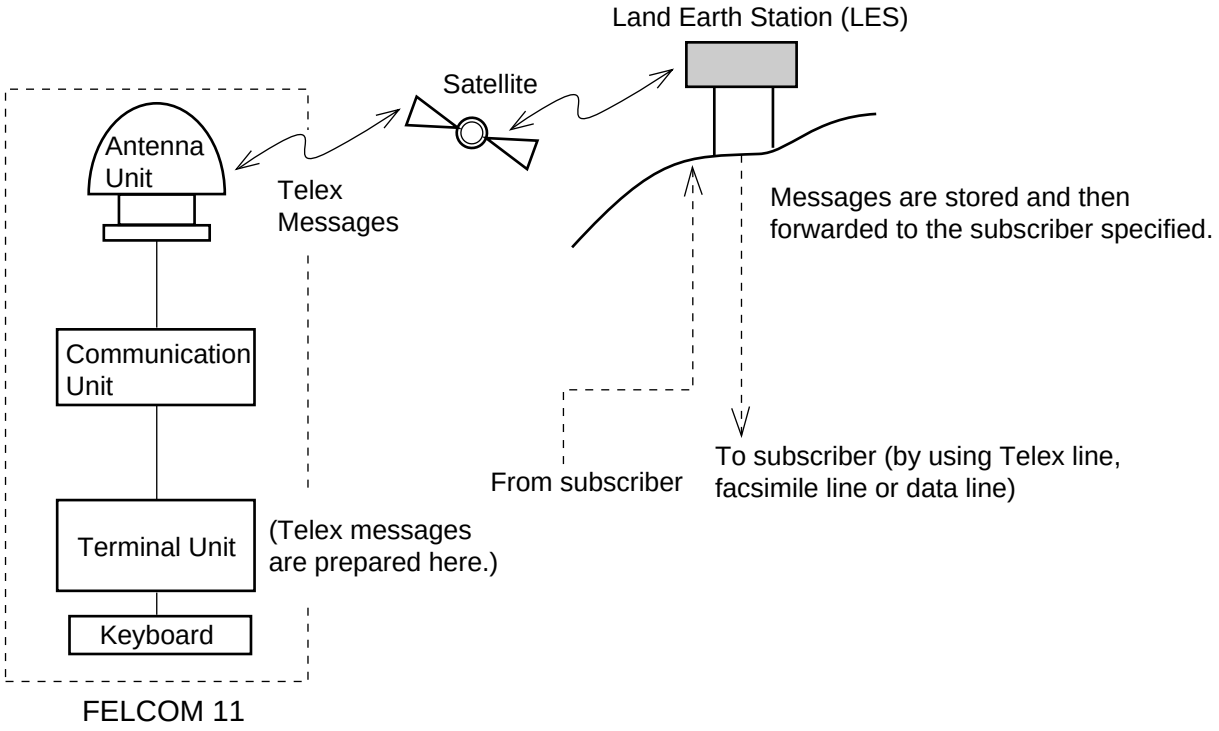
FELCOM 11

6.1 Overview

The FELCOM 11 Inmarsat C Mobile Earth Station consists of three units: antenna unit, communication unit and terminal unit.

Note: There are two types of terminal unit. IB-581 is CRT type. IC-511 is CRT type.

A printer automatically prints all transmit and receive Telex (and MSI) messages. Note that confidential messages are not printed automatically.



The Inmarsat C system divides the world into four regions and each region is covered by its own satellite. These satellites are AOR-W (Atlantic Ocean Region-West), AOR-E (Atlantic Ocean Region-East), POR (Pacific Ocean Region), and IOR (Indian Ocean Region).

Messages transmitted by the FELCOM 11 pass to a satellite and are then sent to the Land Earth Station (LES) specified. The LES stores the message temporarily and then transmits it to the subscriber specified. Thus, like the DP-5/6, real time communications with an LES is not available. The method of communications used is called store-and-forward Telex.

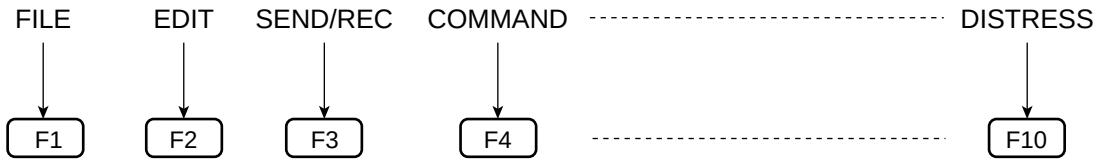
Besides its fundamental function of handling Telex traffic, the FELCOM 11 can also;

- **Transmit the distress alert**
- Receive Maritime Safety Information (MSI) via its built-in EGC receiver
- Transmit position data to a subscriber at regular intervals (called data reporting)

6.2 Menu Overview

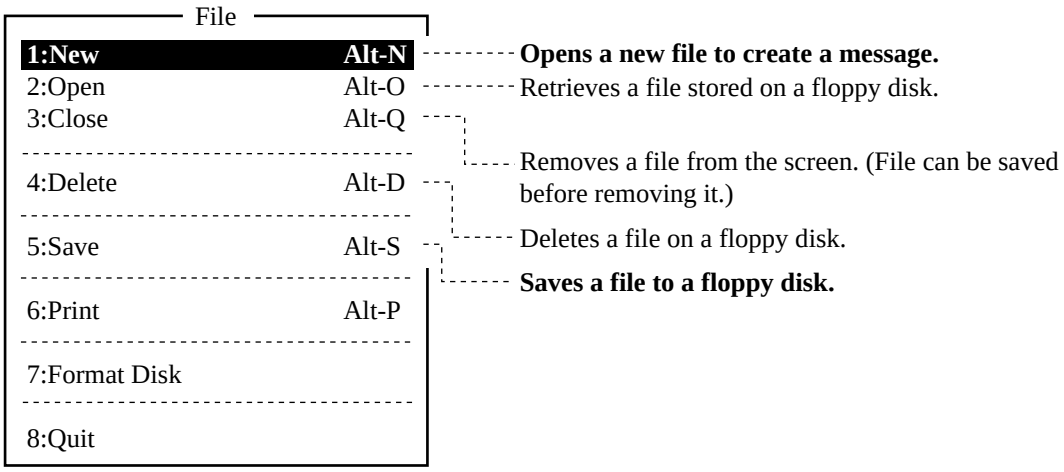
The function keys (F1-F10) at the top of the keyboard control the function menus (FILE, EDIT, …) shown at the top of the screen. Simply press appropriate function key to display a function menu.

The Esc key functions to undo previous operation.



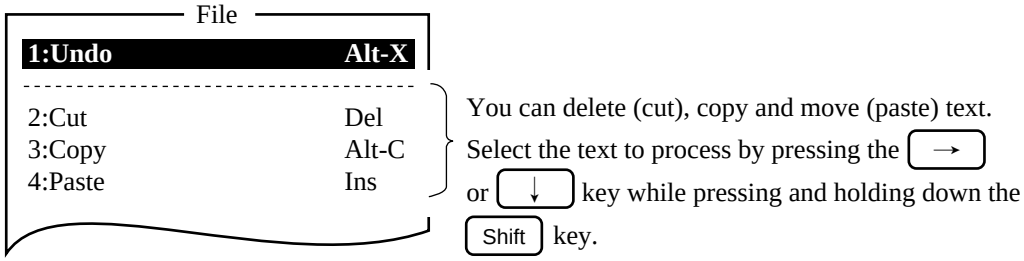
Items on function menus can be selected two ways: Select item with the arrow keys and press the Enter key or press appropriate numeric key.

F1 (FILE)



F2 (EDIT)

The EDIT menu provides word processing functions. This function is only operative at the message editing screen.



F3 (SEND/REC)… For transmitting or receiving a message.

- 1:Send
  - 1:Send Message — For transmitting a message.
  - 2:Cancel
  - 3:Request Delivery Status
  - 4:Message Status List — Confirms if the message from your station was delivered to the subscriber specified.
- 2:Data Report
  - 1:Data Report
  - 2:Message Report — **Delivers navigation data of your vessel such as position, speed and bearing to a subscriber at predetermined times or at a regular interval.**
  - 3:Data Network ID
- 3:Receive Message
  - 1:Display Message
  - 2:Save Message
  - 3:Delete Message

  } Displays, stores and deletes a received message.
- 4:EGC
  - 1:Display Message — Displays EGC (MSI) message.
  - 2:EGC Network ID
- 5:Log — Displays the particulars of the latest 50 received and transmitted messages except EGC messages.

F4 (COMMAND)

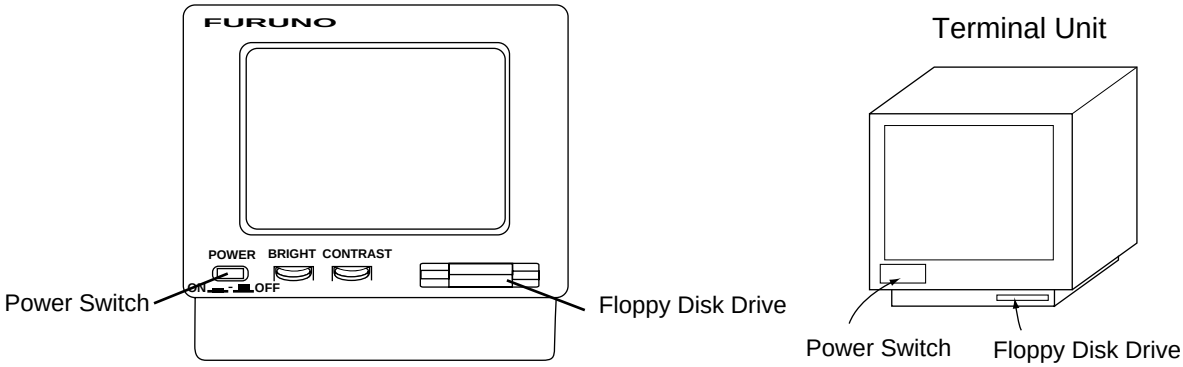
- 1:Abort
- 2:Login — Registers your vessel with Inmarsat C system. (Be sure to **login** after turning on the power.)
- 3:Logout — Logs out your vessel from Inmarsat C system. (Be sure to **logout** before turning off the power.)
- 4:Scan NCS
- 5:Select NCS — Changes satellite in use.
- 6:Stop Alarm — **Alarm sounds when distress or urgent EGC message is received. To silence the alarm, select this function.**

F5 (SYSTEM)

- 1:System Setup
- 2:EGC Setup
- 3:NCS Channel List
- 4:EGC Channel List
- 5:LES List — **Registers LESs.**
- 6:Station List — **Registers stations (subscribers).**
- 7:Ship Position

6.3 Initial Setup

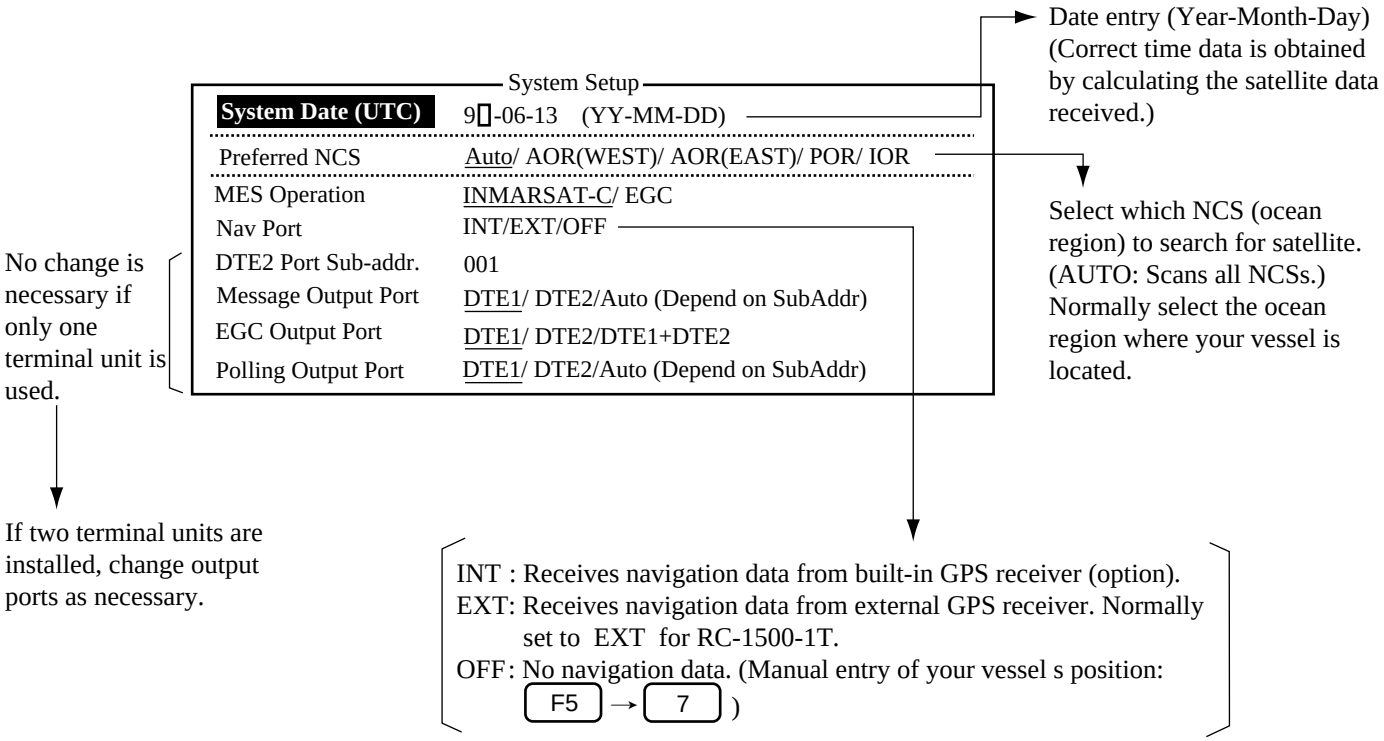
To turn on the FELCOM 11 system, turn on the power switch on the switchboard at the bottom of the console and then turn on the terminal unit.



The terminal unit displays the "normal" screen. Two to three minutes later "SYNC" appears at the bottom of the screen. If it does not appear contact a FURUNO agent or dealer for advice.

After SYNC appears check that the three items which follow are correct. If wrong, enter correct setting.

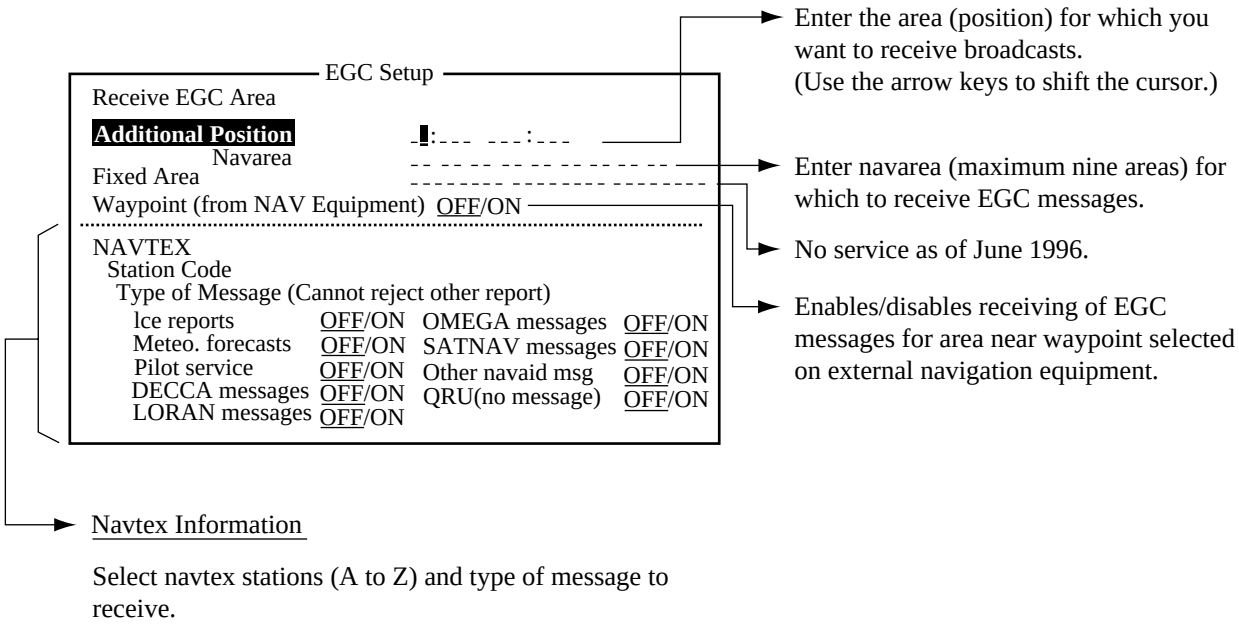
1. System settings (F5 → Enter)



To change setting, operate arrow keys to place the underline under setting desired. Press the Enter key to finish.

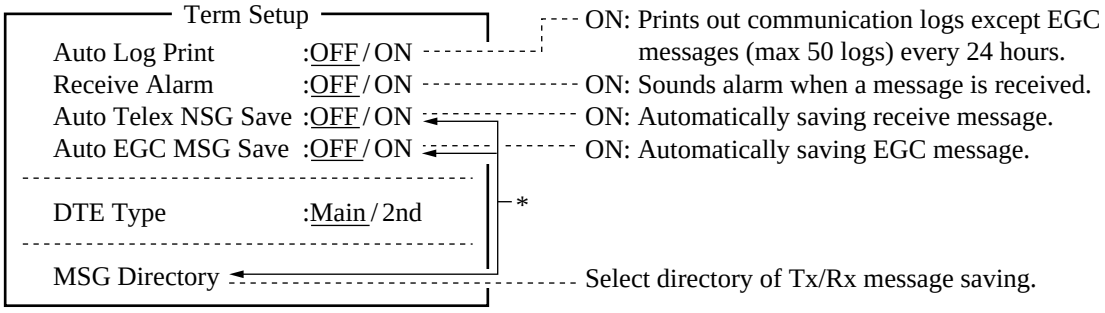
2. EGC settings (F5 → 2)

Select area for which to receive EGC messages (information).



Press the Enter key to finish. If receive area is not specified, EGC messages for the area nearest your vessel will be received.

3. Terminal unit setup (F6)



* LCD type only

6.4 Login/Logout

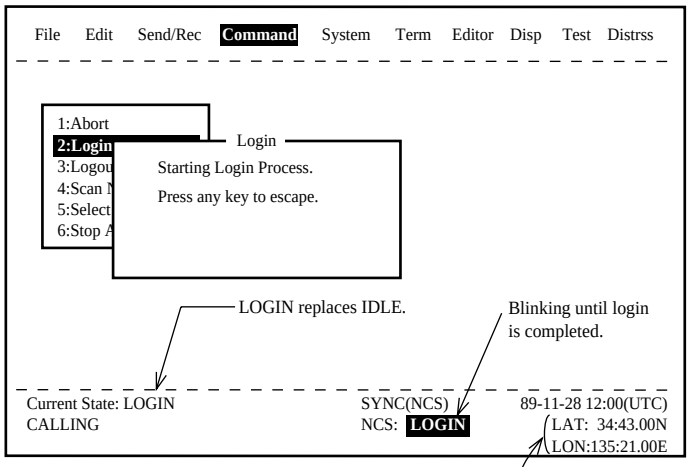
1. Login

Login registers your vessel with NCS to enable communications between your vessel and LESs.

First confirm that "Current State: Idle" is displayed at the bottom left corner on the screen. Then, login as follows:

• F4 → 2 → Enter

Several minutes later the indication "LOGIN" lights at the bottom of the screen to denote completion of login operation.



NCS: There are four NCSs in the world. A NCS handles many LESs.

When login is completed successfully, "**Successful login**" appears.
"**LOGIN**" lights and the ocean region you logged-in with appears on the screen.

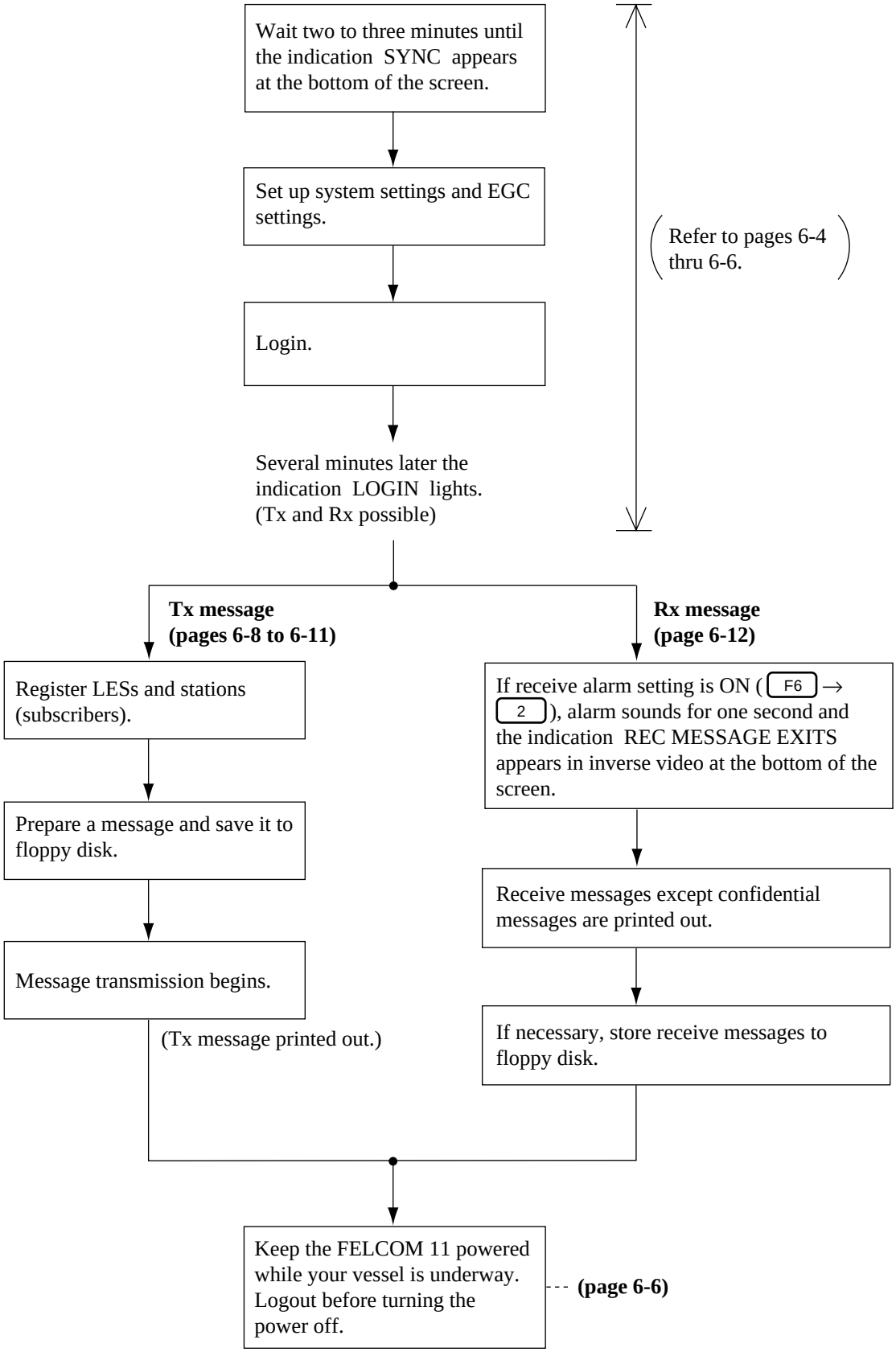
2. Logout

Logout registers your vessel as inactive. This notifies anyone calling you that you are currently unavailable. **Logout before turning off the FELCOM 11.** If you do not logout before turning off the power, the LES may try to send you a message from a subscriber. **The LES may charge the subscriber even if you never receive the message.**

• F4 → 3 → Enter

When logout is completed, "**Successful logout**" appears.
"Current State" returns to "**IDLE**", and "**LOGOUT**" stops blinking and the lights.

6.5 Basic Communications Procedure



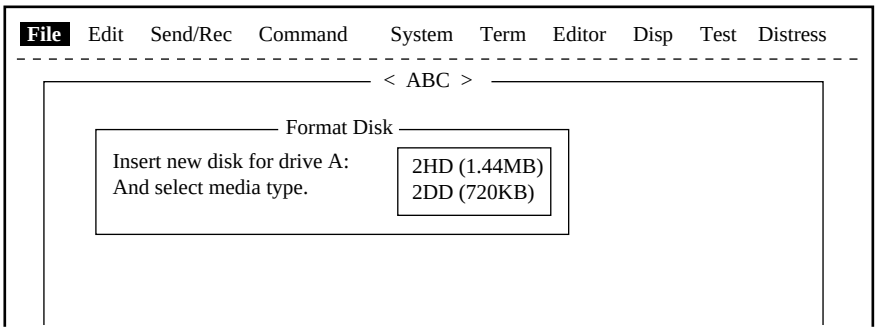
6.6 Preparing/Saving Messages

You can prepare messages and save them to floppy disks for later use.

Formatting a floppy disk

procedure

1. Insert a blank floppy disk into the disk drive.
2. Press the F1 key.
3. Press 7 key.



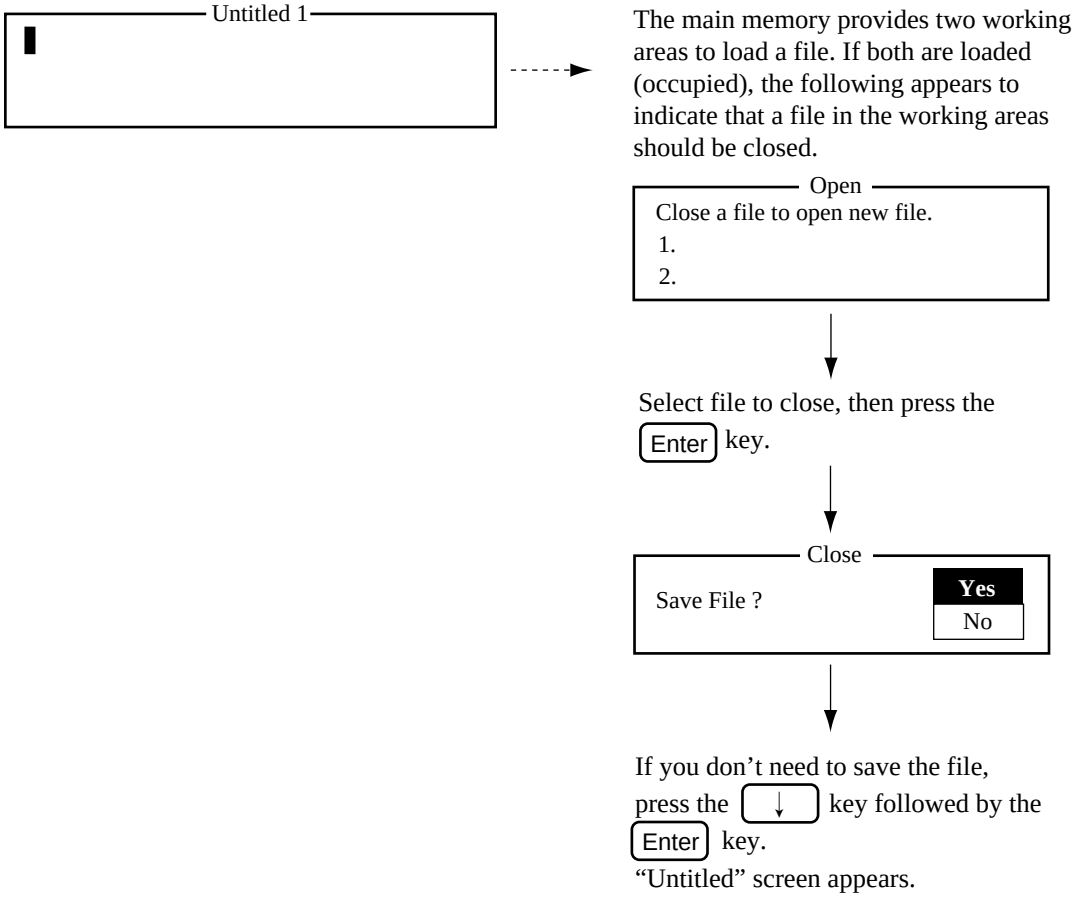
4. Select “2HD” or “2DD” and press Enter key.
5. The screen asks “OK to format FD?”
6. Select Yes to format the disk. Press Enter key to begin formatting.

Note: If there is no floppy disk in the drive, “FD not inserted in drive. Press any key to escape.” appears on the display.

7. “Now Formatting” appears on the screen during formatting. Also, the access lamp on the disk drive lights. DO NOT remove the disk during formatting.
8. When formatting is completed (about one minute), “Formatting Completed.” appears on the display and the access lamp goes off. You can now return to the default display by pressing any key.

Preparing messages

1. Press F1 Enter.



2. Type message.

   Useful keys

   Back Space : Deletes character to left of cursor.
   Enter : Advances cursor to next line.

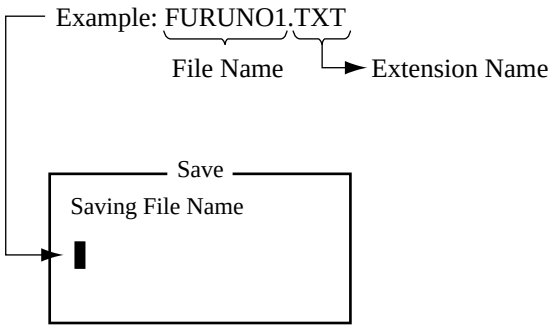
Saving messages

Assign a file name to the message and save the file as shown below. Note that a floppy disk can hold 720 Kbytes of data (about 720,000 characters).

A message can be saved two ways: without losing your place on the editing screen (Save) or save it before clearing the editing screen (Close).

Save

1. Press F1 5.
2. Enter file name (up to eight characters).



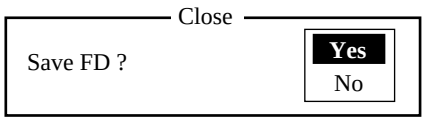
3. Press the Enter key.

Close

1. Press F1 3 Enter.
2. Follow steps 2 and 3 in “Save” above.

Note: You can close a file without saving it as follows:

1. Press F1 3.



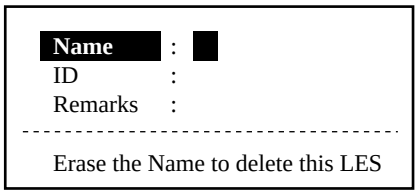
2. Select “No” with the ↓ key.
3. Press the Enter key.

6.7 Programming LESs and Stations

You may program often-called LESs and stations. Refer to the International Telex/Telephone Country Code List at the end of this chapter.

1. Programming LES list

1. Press F5 5, move the cursor to a blank box in the desired ocean region and then press the Enter key.

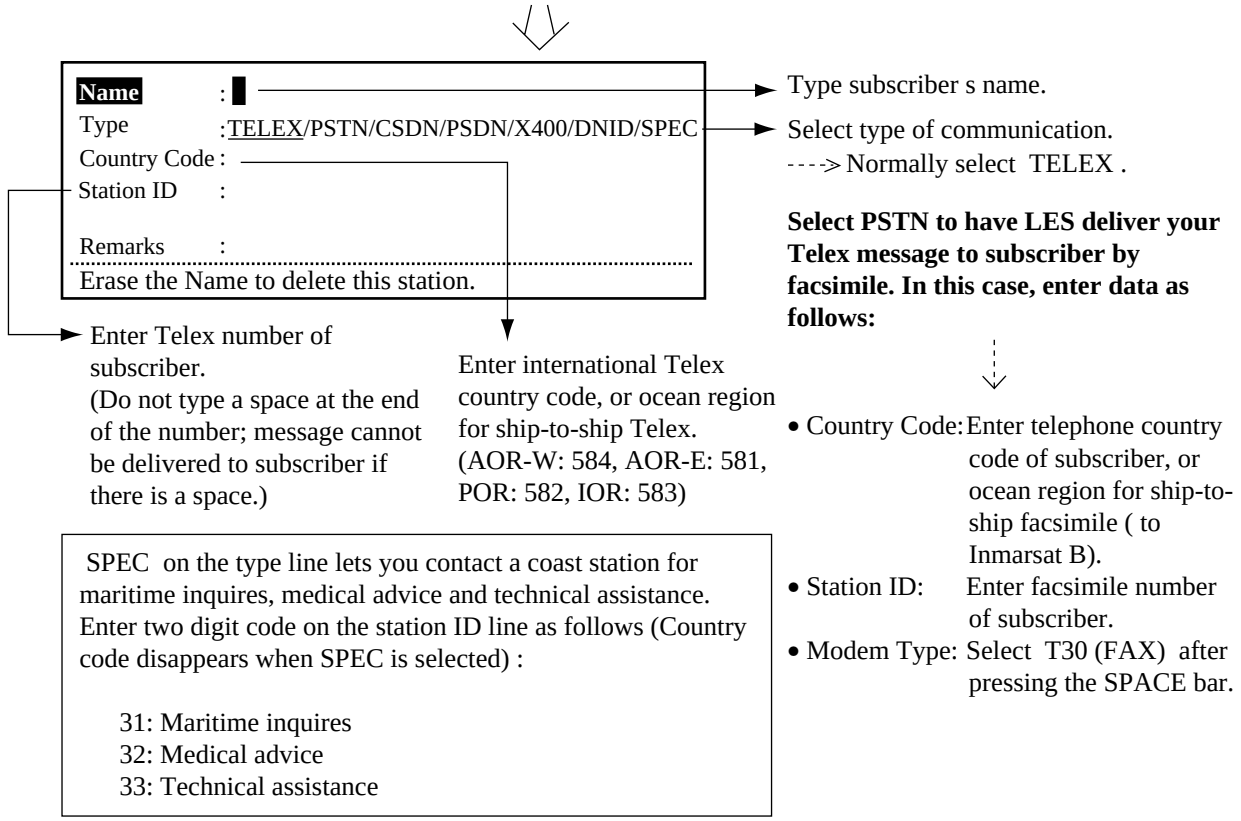


2. Enter LES name and ID no. and then press Enter Esc (twice).

Note: Most LESs have been programmed at the factory. Check the LES list before entering new LESs.

2. Programming station list

Press F5 6, move the cursor to a blank box in the list and then press the Enter key.



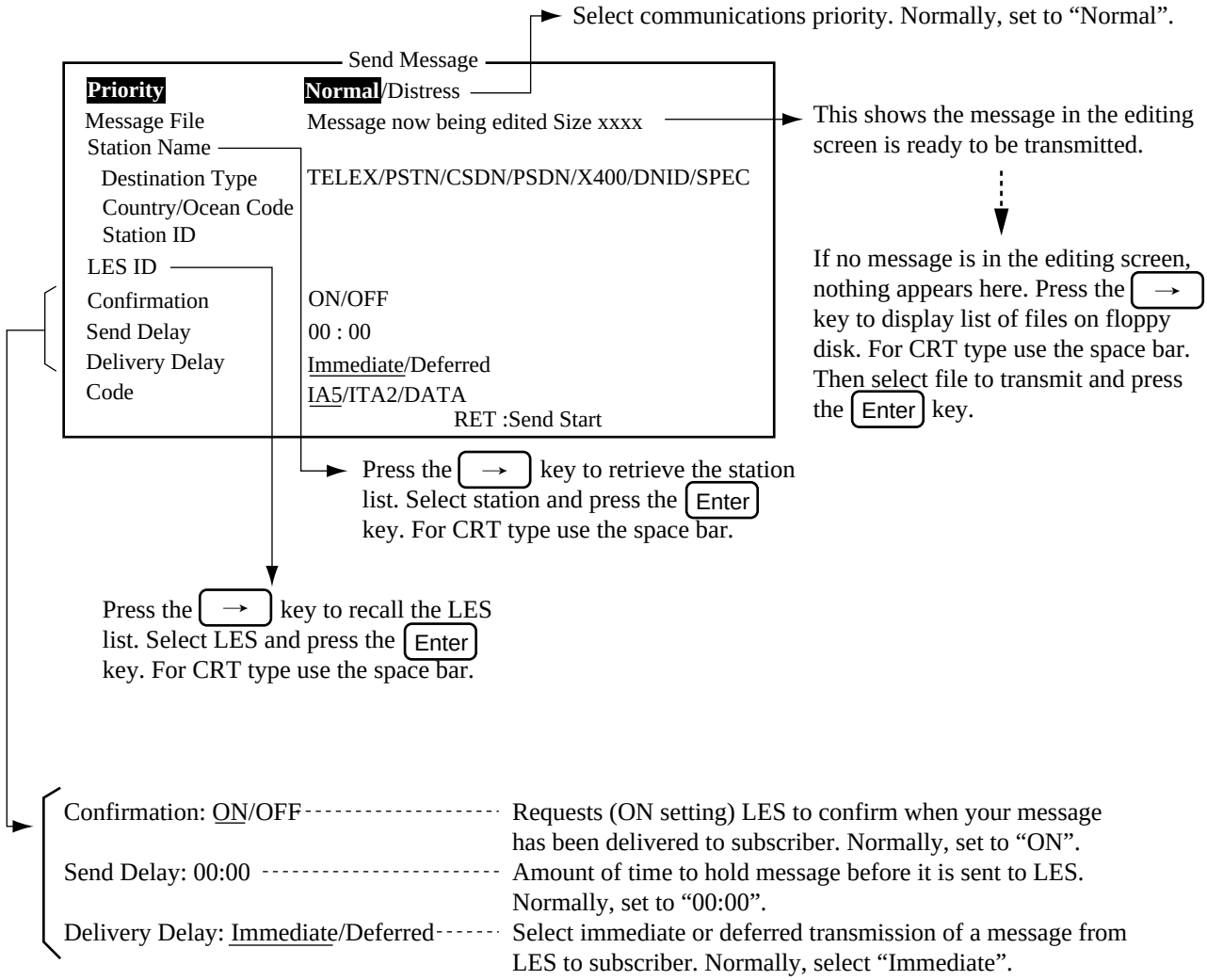
Press the Enter key to finish, then press the Esc key twice to return to the normal display.

6.8 Transmitting

A message may be transmitted two ways: transmit a message you've just prepared or transmit one you've saved to a floppy disk.

Procedure

1. Press F3 Enter (twice).



Confirmation: ON/OFF ---------- Requests (ON setting) LES to confirm when your message has been delivered to subscriber. Normally, set to "ON".

Send Delay: 00:00 ---------- Amount of time to hold message before it is sent to LES. Normally, set to "00:00".

Delivery Delay: Immediate/Deferred ---------- Select immediate or deferred transmission of a message from LES to subscriber. Normally, select "Immediate".

2. After setting up all items, press the Enter key.

Send Start	
Yes	No

3. Confirm that “Yes” is highlighted and then press the Enter key.

“Message is entered in sending Buffer” appears on the display and the message is printed. “Sending” appears at the bottom corner on the display. After message has been transmitted, “Successful Sending” appears.

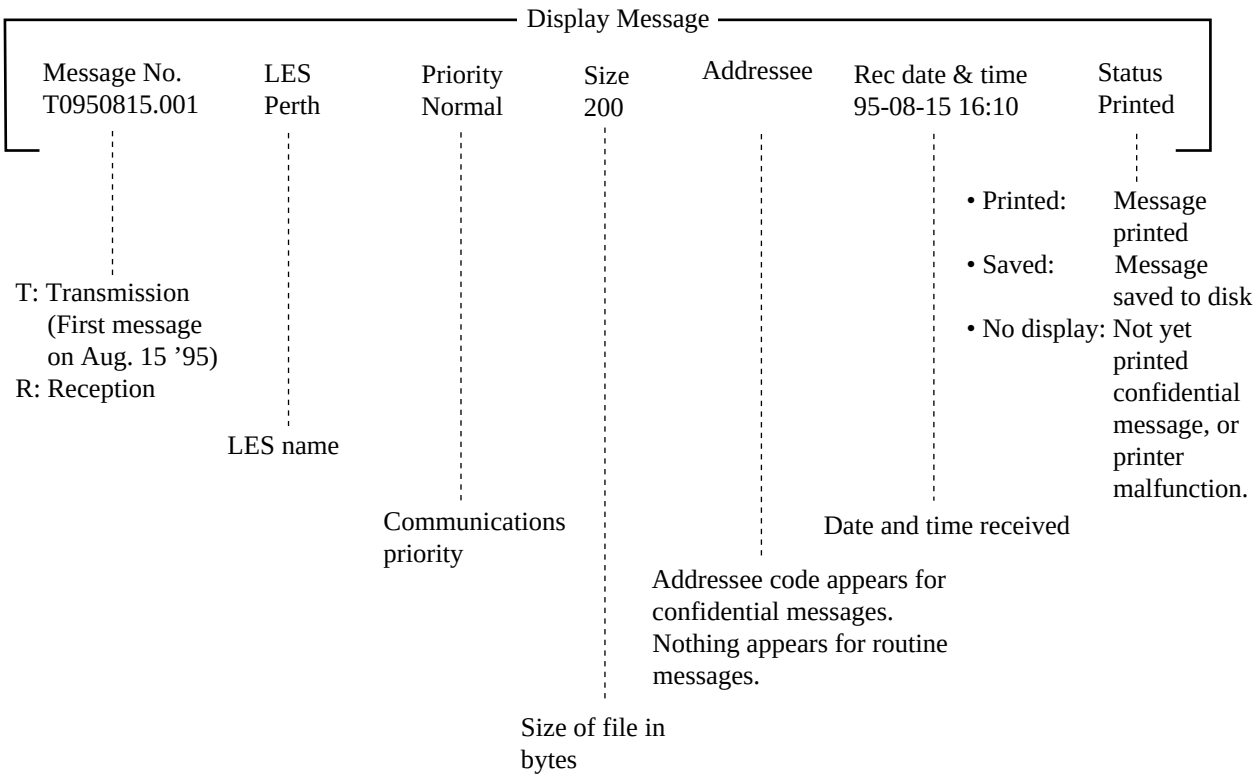
To confirm if the subscriber received the message, press F3 Enter 4 to display the Message Status List. “Complete” appears in the Delivery column when the subscriber has received the message.

6.9 Receiving

Receiving is fully automatic thus no operation is required. Receive messages may be opened; printed, and saved to a floppy disk.

Opening/printing receive messages

1. Press F3 3 Enter.



2. Select a message and then press the Enter key. (For confidential messages, enter password before pressing the Enter key.)
3. To print the message, press the P key while pressing and holding down the Ctrl key.

Saving receive messages to floppy disks

1. Press F3 3 2.
2. Select message to save and then press the Enter key. (For confidential messages, enter password before pressing the Enter key.)

Opening/printing EGC messages

1. Press F3 4 Enter. The contents of the latest EGC message and the time it was received are displayed.
2. The N and P keys function to display the next and previous messages, respectively.
3. To print an EGC message, press the P key while pressing and holding down the Ctrl key.

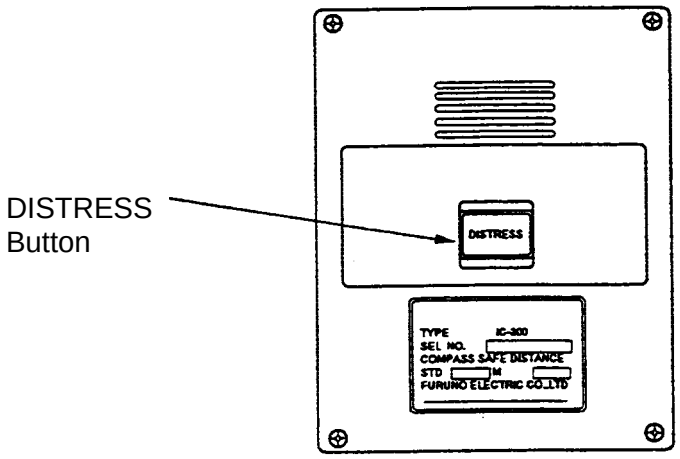
EGC Distress or urgent messages trigger the aural alarm. (The aural alarm also sounds at the Distress Alert Unit IC-300 (option)). Silence the alarm at both the FELCOM 11 and IC-300 by pressing F4 6 (Stop Alarm). Do not press the DISTRESS button on the IC-300.

6.10 Transmitting the Distress Alert

Distress alert transmission

Press the Distress Alert button on the distress alert box IC-300. This button requires two independent actions, i.e, (1) Peel of the red seal. (2) Break the protective cover and press the Distress Alert button once. The lamp inside the button flashes slowly and an audible alarm sounds. Five seconds later, the distress alert is transmited and the lamp flashed faster. When you receive acknowledgment of the distress alert from an LES, the lamp lights continuously and the audible alarm sounds continuously.

To cancel an alert transmission, immediately push the bottom again **(within 5 s)**. The lamp goes off and the alert is not transmitted.



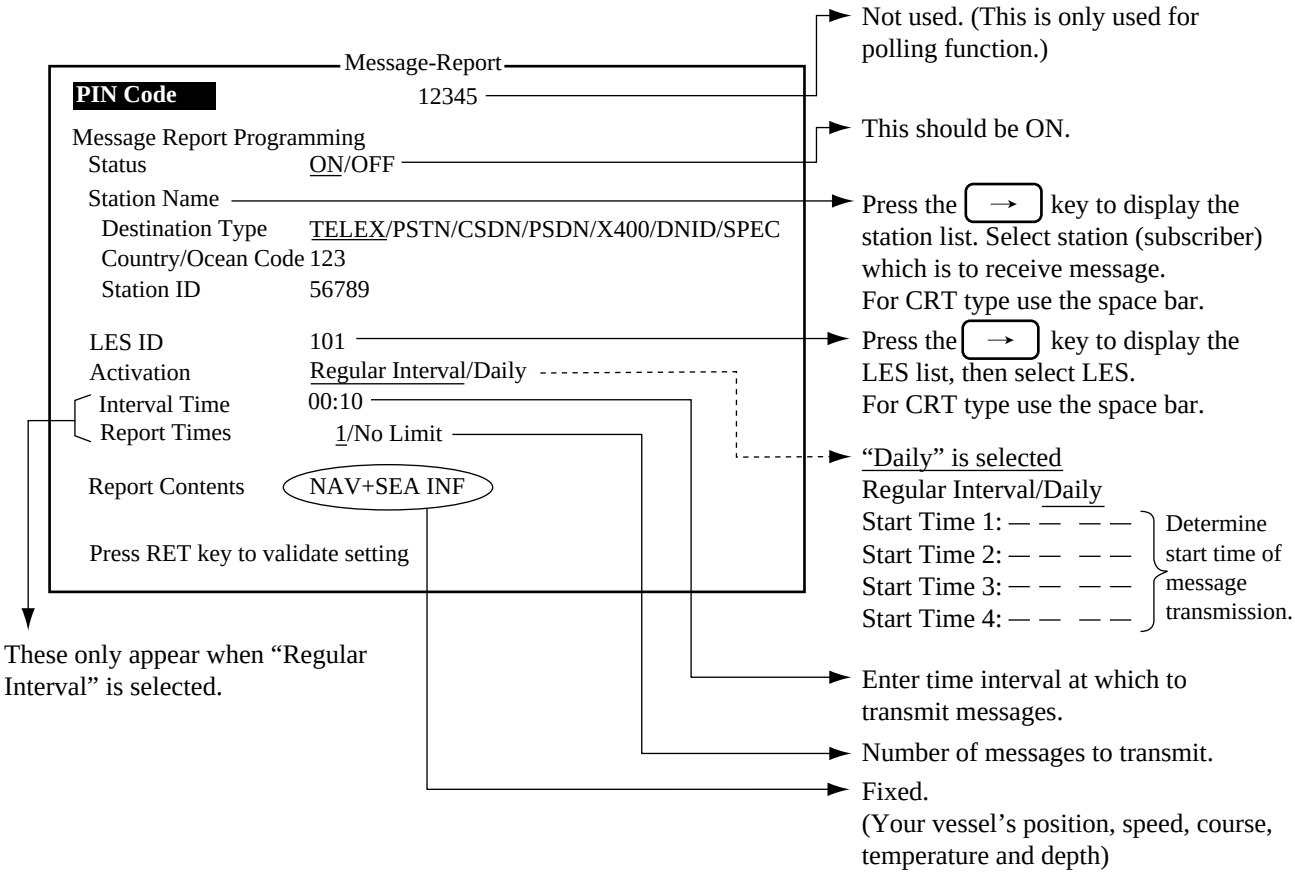
(Do not press the button to silence an alarm for incoming distress or urgent message.)

6.11 Other Functions (Helpful Functions)

1. Message reporting

Navigation data such as position can be transmitted to a specific subscriber at regular intervals.

1. Press F3 2 2.



2. After setting up all items, press the Enter key.

2. Opening/deleting files on a floppy disk

Opening files

Press F1 2, select file to open and press the Enter key.

Deleting files

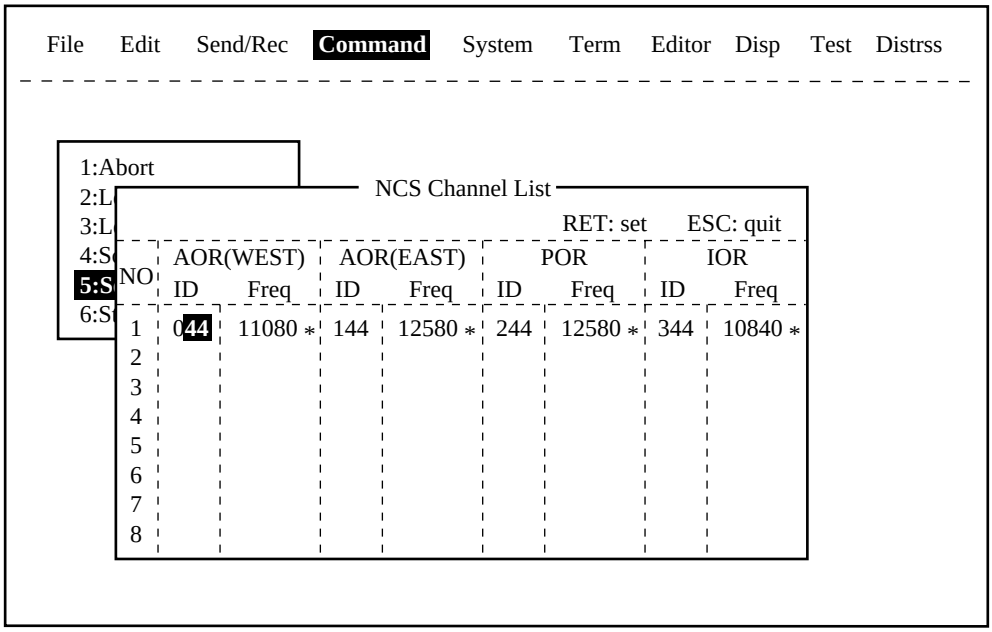
Press F1 4, select file to delete, press the Enter key, confirm that "Yes" is highlighted, and press the Enter key.

3. Deleting LES/Station from respective list

1. Press F5 5 for LES list (F5 6 for station list), select LES or station to delete, and then press the Enter key.
2. Press the Back Space key successively to delete LES or station name.
3. Press the Enter key.

4. Changing satellite in use

1. Press F4 5.



2. Select NCS channel (satellite).
3. Press the Enter key.

5. Preparing confidential messages

When communicating with a FELCOM 11, you can attach a password or an addressee code to the first line of message text as shown below. A password-affixed message cannot be “opened” unless the correct password is entered at the receiving side.

Addressee code and Password

S??? - Addressee code - Password: text of message

Addressee code	Password
Maximum 8 characters (ex: FURUNO)	Maximum 8 characters (ex: CAPTAIN)

Addressee code only

S??? - Addressee code : text of message

Maximum
8 characters
(ex: FURUNO)

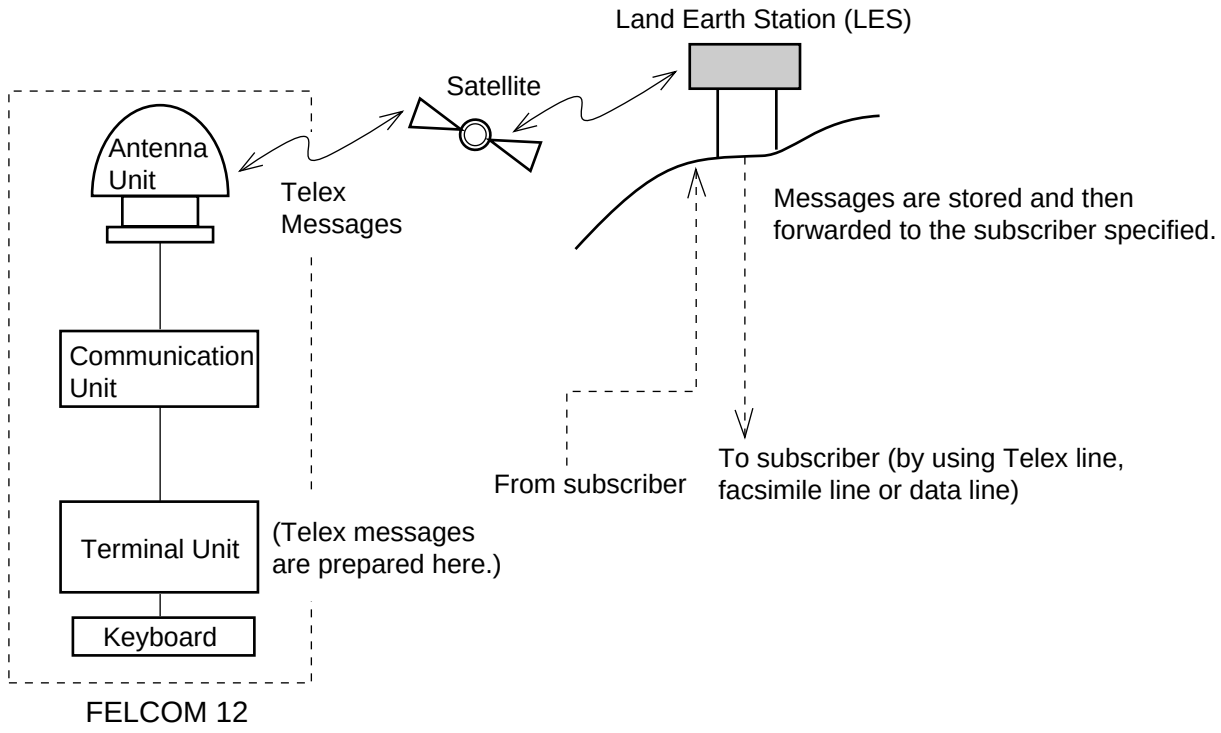
MEMO

FELCOM 12

6.12 Overview

The FELCOM 12 Inmarsat C Mobile Earth Station consists of three units: antenna unit, communication unit and terminal unit.

A printer automatically prints all transmit and receive Telex (and MSI) messages. Note that confidential messages are not printed automatically.



The Inmarsat C system divides the world into four regions and each region is covered by its own satellite. These satellites are AOR-W (Atlantic Ocean Region-West), AOR-E (Atlantic Ocean Region-East), POR (Pacific Ocean Region), and IOR (Indian Ocean Region).

Messages transmitted by the FELCOM 12 pass to a satellite and are then sent to the Land Earth Station (LES) specified. The LES stores the message temporarily and then transmits it to the subscriber specified. Thus, like the DP-5/6, real time communications with an LES is not available. The method of communications used is called store-and-forward Telex.

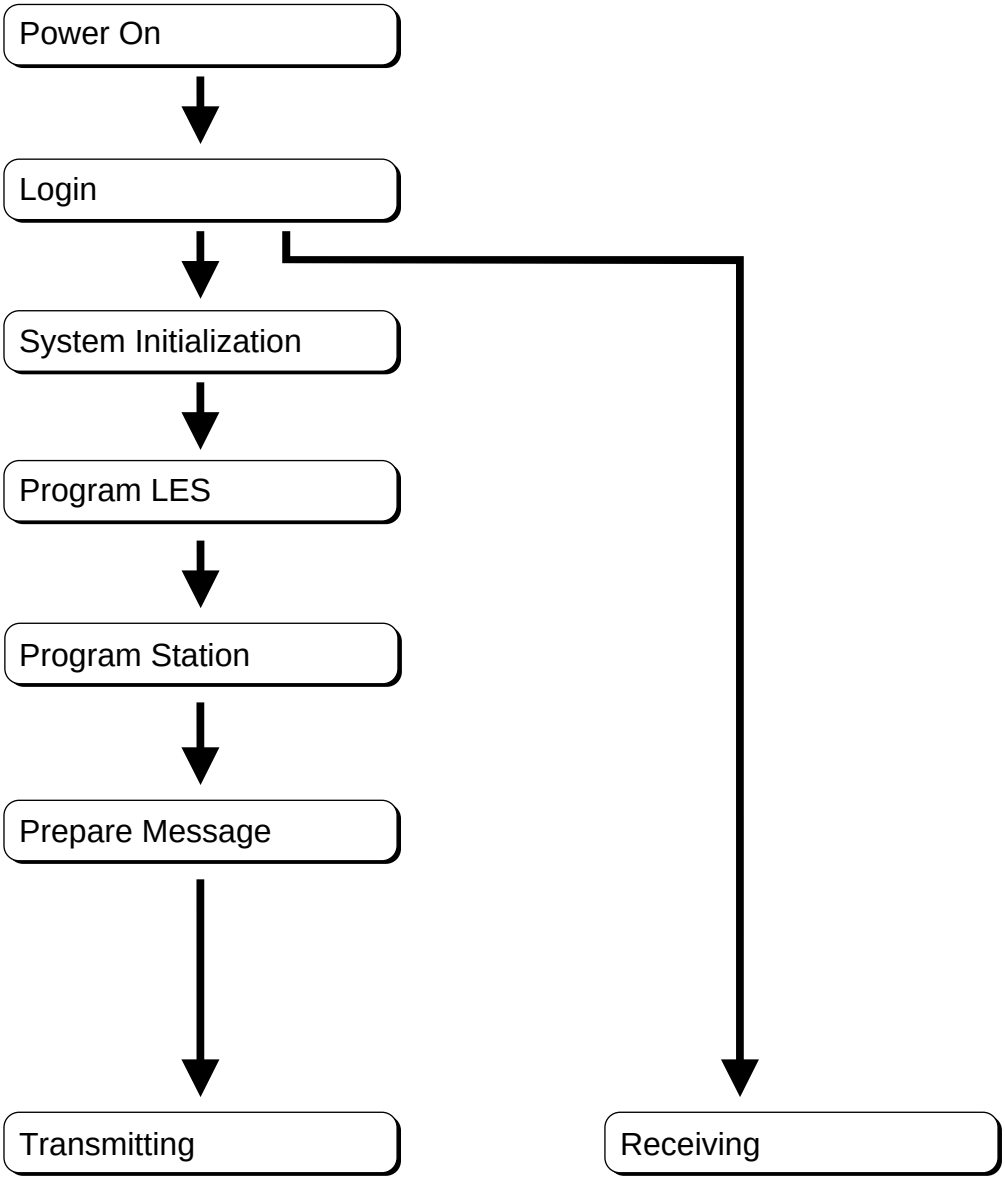
Besides its fundamental function of handling Telex traffic, the FELCOM 12 can also;

- **Transmit the distress alert**
- Receive Maritime Safety Information (MSI) via its built-in EGC receiver
- Transmit position data to a subscriber at regular intervals (called data reporting)

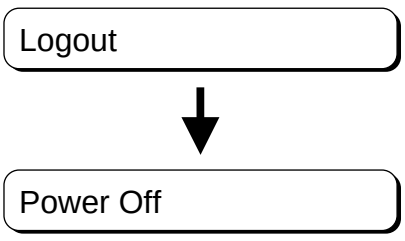
6.13 MENU TREE

- F1: File
  - 1: New ALT-N
  - 2: Open ALT-O
  - 3: Close ALT-Q
  - 4: Save ALT-S
  - 5: Delete ALT-D
  - 6: Rename
  - 7: Print ALT-P
  - 8: Format Disk
  - 9: MIME (Decode)
- F2: Edit
  - 1: Cut DEL
  - 2: Copy ALT-C
  - 3: Paste INS
  - 4: Insert (with Citation)
  - 5: Select All ALT-A
  - 6: Search or Replace
  - 7: Go to line
    - 1: Top of Text Fn-←
    - 2: End of Text Fn-→
    - 3: Go to Line
  - 8: Time or Pos. Ins
  - 9: Change Window ALT-V
- F3: Transmit
  - 1: Transmit Message
  - 2: Cancel
  - 3: Request Delivery Status
- F4: EGC
  - 1: Display EGC Message
  - 2: EGC Network ID
- F5: Reports
  - 1: Data Report
  - 2: Message Report
  - 3: Date Network ID
- F6: Logs
  - 1: Send Message Log
  - 2: Receive Message Log
  - 3: EGC Log
  - 4: Log
- F7: Options
  - 1: Login
  - 2: Logout
  - 3: Abort
  - 4: Select NCS
  - 5: Ocean Region
  - 6: Test
- F8: Setup
  - 1: Distress Message Setup
  - 2: System Setup
  - 3: Editor Setup
  - 4: Terminal Setup
  - 5: EGC Setup
  - 6: Auto Mode Setup
  - 7: E-Mail Setup
  - 8: Directories
  - 9: Configuration
    - 1: Station List
    - 2: LES List
    - 3: EGC Channel List
    - 4: NCS Channel List
    - 5: E-Mail Serice List
- F9: Position
- F10: Stop Alarm

6.14 OPERATIONAL OVERVIEW



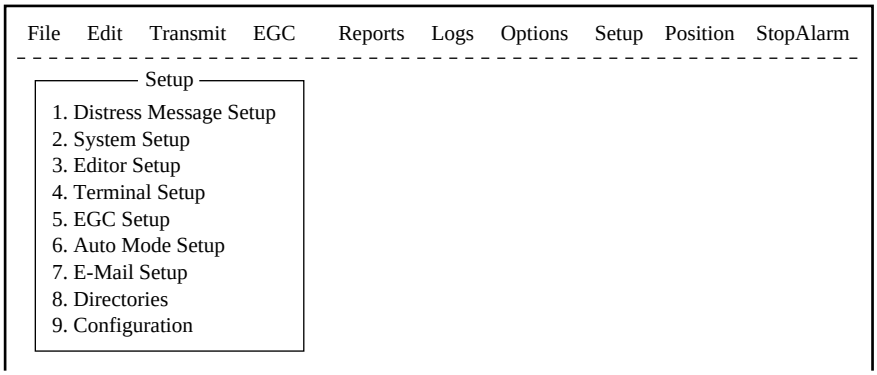
The FELCOM 12 should be turned on for the duration of a voyage.
Be sure to logout with Inmarsat-C system before turning off the equipment.



6.15 System setup

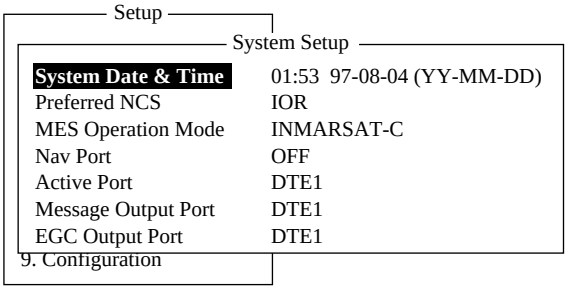
The System Setup menu provides for input of date, time, operating mode, and port function.

1. Press [F8] to select the Setup menu.

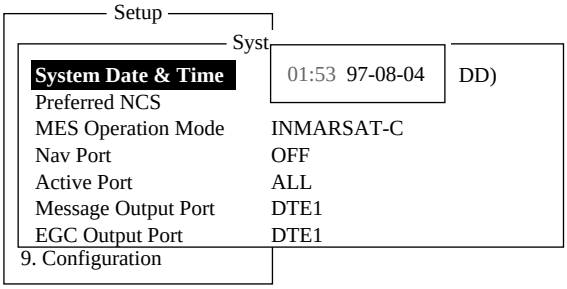


2. Press [2] to display the System Setup screen.

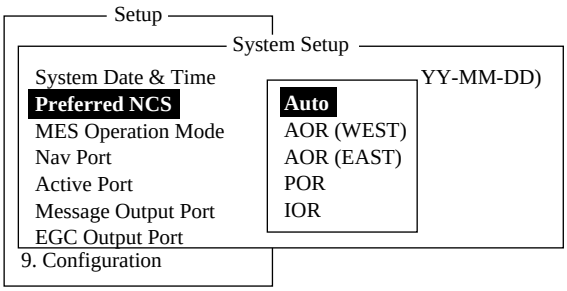
Note: If the communication unit is off or its interconnection cable has loosened or is damaged, "No response from communication unit." appears.



3. Press [Enter] to open the date window.



4. Enter the date.
5. Press [Enter] to close the window.
6. Press [↓] to advance the cursor to the Preferred NCS line.
7. Press [Enter] to open the selection window.

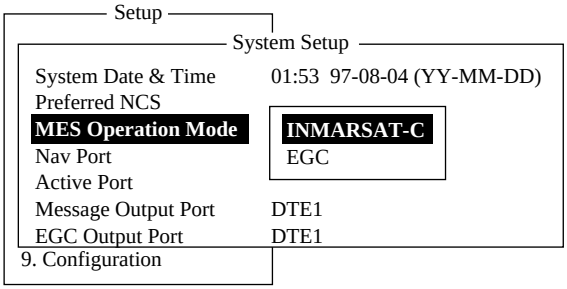


8. Select appropriate NCS (Auto, AOR-West, AOR-East, POR or IOR) by arrow keys. The FELCOM 12 will search for that NCS signal each time it is turned on. The Auto setting searches all NCS signals to find the most suitable NCS; thus, scanning can take quite some time.

9. Press [Enter] to close the selection window.

10. Press [↓] to advance the cursor to the MES Operation Mode line.

11. Press [Enter] to open the selection window.

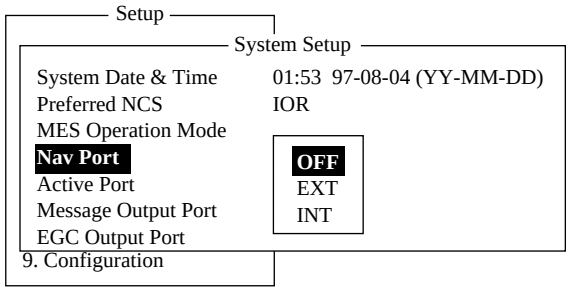


12. Select operating mode, either Inmarsat C or EGC. The Inmarsat C setting provides telex communications and operates as an EGC receiver when not transmitting or receiving. The EGC setting enables EGC-only receiver operation. In this case EGC RECEIVER appears in reverse indication at the bottom of the screen.

13. Press [Enter] to close the selection window.

14. Press [↓] to advance the cursor to the Nav Port line.

15. Press [Enter] to open the selection window.



16. Select the navigation device which is interfaced to the FELCOM 12.

OFF: No connection

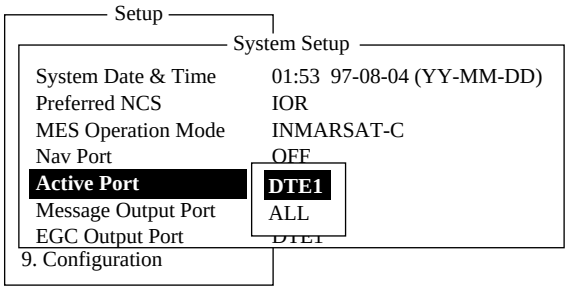
EXT: Select this setting when external navigation device is connected. The FELCOM 12 automatically selects ship's position information in the order of GPS, LC, and DECCA.

INT: Internal GPS board provides position data.

17. Press [Enter] to close the selection window.

18. Press [↓] to advance the cursor to the Active Port line.

19. Press [Enter] to open the selection window.



20. Select active port (DTE); "DTE1" or "ALL".

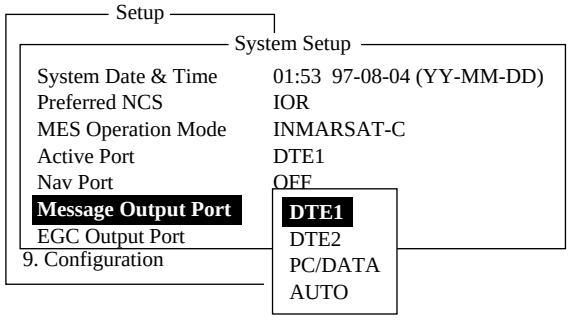
DTE1: Only DTE1 is active.

ALL: DTE1, DTE2 and PC/DATA are active.

21. Press [Enter] to close the selection window.

22. Press [↓] to send the cursor to the Message Output Port line.

23. Press [Enter] to open the selection window.



24. Select the DTE where you want to store receive messages.

DTE1: All receive messages are routed to the main DTE (connected to DTE1 on the communication unit) regardless of sub address.

DTE2: All receive messages are routed to the 2nd DTE (connected to DTE2 on the communication unit) regardless of sub address.

PC/DATA: All receive messages are routed to the PC/DATA (connected to PC/DATA on the communication unit) regardless of sub address.

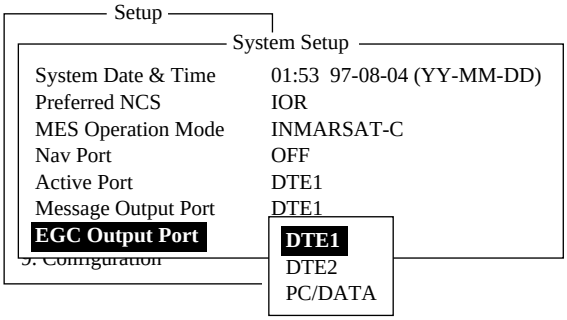
AUTO: Select to route messages with sub address 000 to the main DTE, and messages with the sub address of the 2nd DTE to the 2nd DTE. All other messages are routed to the main DTE.

Note: Do not select DTE2 or Auto when there is no DTE connected to the DTE2 port; messages cannot be read from the communications unit.

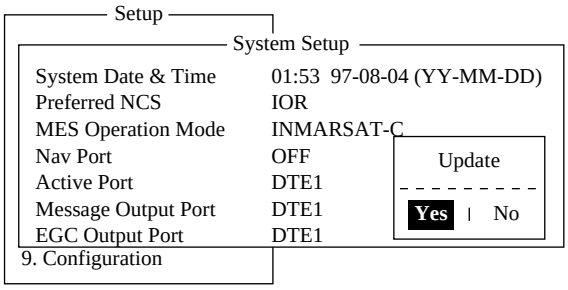
25. Press [Enter] to close the selection window.

26. Press [↓] to advance the cursor to the EGC Output Port line.

27. Press [Enter] to open the selection window.



28. Select the DTE where you want to store receive EGC messages; DTE1, DTE2 or PC/DATA.
29. Press [Enter] to close the selection window.
30. Press [Esc] to open the update window.

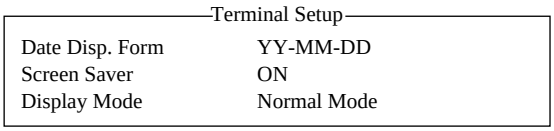


31. Press [Enter] to select “Yes”.
32. Press [Esc] to register all system setup settings and return to the standby display.

6.16 Terminal Setup

Terminal Setup menu provide for date display format, screen saver and display mode.

1. Press [F8] to select the Setup menu.
2. Press [4] to display the Terminal Setup screen.

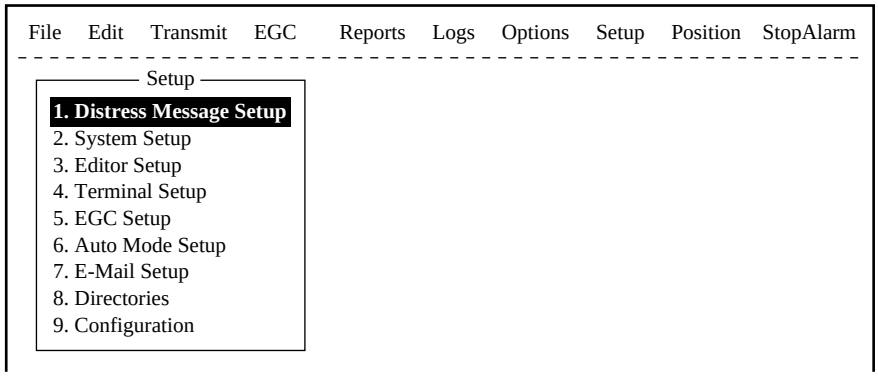


3. Press [Enter] to open the selection window.
4. Select date display format “ YY-MM-DD(year-month-day)” ,“ MMM-DD-YY(month-day-year)” or “ DD-MMM-YY(day-month-year)”.
5. Press [Enter] to close the selection window.
6. Press [↓] to advance the cursor to the Screen Saver Line.
7. Press [Enter] to open the selection window.
8. Select “ ON” or “ OFF” .

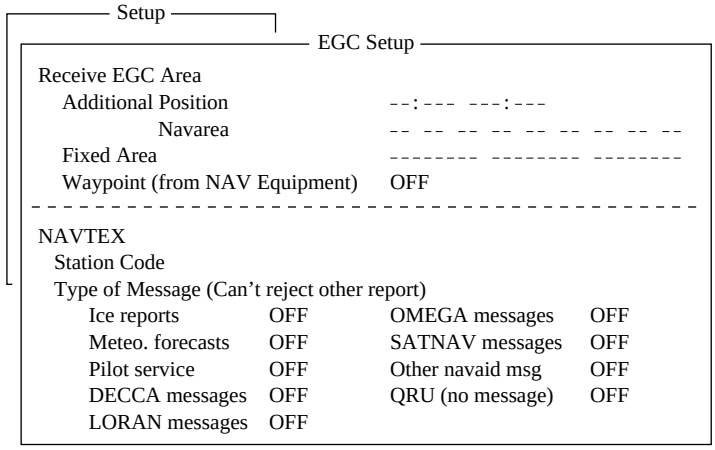
9. Press [Enter] to close the selection window.
10. Press [↓] to advance the cursor to the Display Mode Line.
11. Press [Enter] to open the selection window.
12. Select " Normal Mode" or" REVERSE Mode" .
    Normal Mode displays black characters on white backgrund.
    Reverse Mode displays white characters on black backgrund.
13. Press [Enter] to close the selection window.
14. Press [Esc] to return to the standby display.

6.17 EGC Setup

1. Press [F8] to display the Setup menu.



2. Press [5] to display the EGC Setup screen.



3. The cursor is on the Additional Position line, where you can enter L/L position of an ocean region you want to receive broadcasts for.
4. Press [Enter] to open the additional position window.

   To enter position:

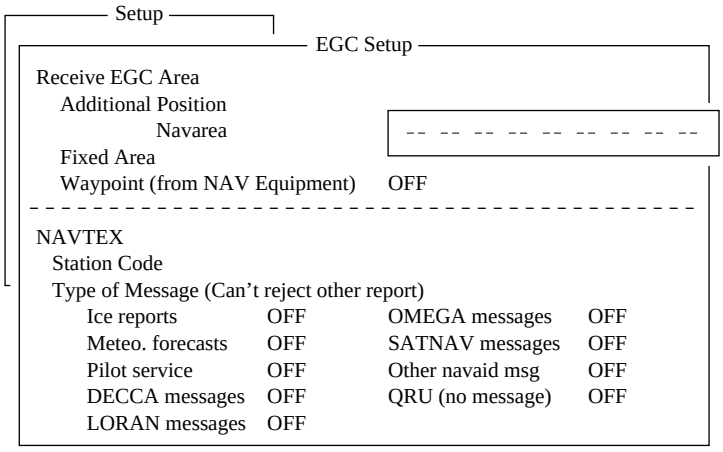
   a) Enter latitude.

b) Enter [N] or [S].

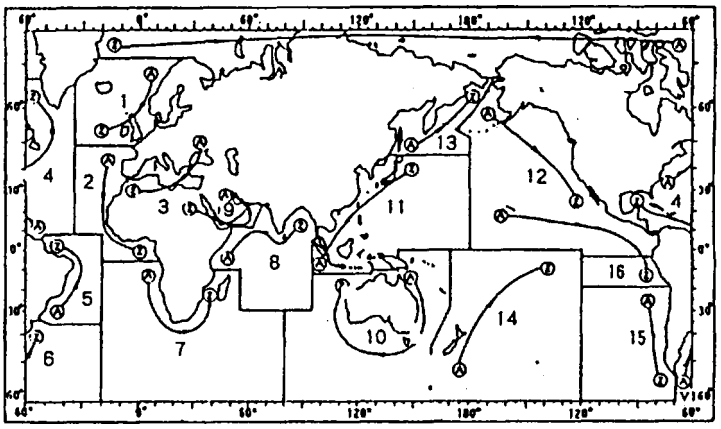
c) Enter longitude.

d) Enter [E] or [W].

5. Press [Enter] to close the position window.
6. Press [↓] to send the cursor to the Navarea line.
7. Press [Enter] to open the Navarea window.

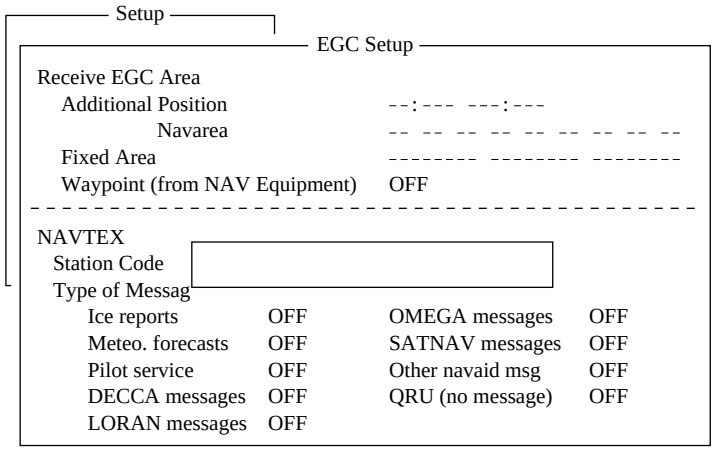


8. Enter additional Navarea(s) (up to nine) for which you want to receive broadcasts. The following figure shows the Navareas of the world. Referring to the figure below for numeral and alphabet, enter additional Navareas (up to nine) for which you want to receive broadcasts.



9. Press [Enter] to close the Navarea window.
10. Press [↓] to send the cursor to Fixed Area.
11. This line is where you enter fixed areas (max. 3) for chart correction service. However, this service is not yet available; enter no data.
12. Press [↓] to send the cursor to the Waypoint line.
13. Press [Enter] to open the Waypoint window.
14. Press [↓] to advance the cursor to the Station Code line.

15. Press [Enter] to open the Station Code window.



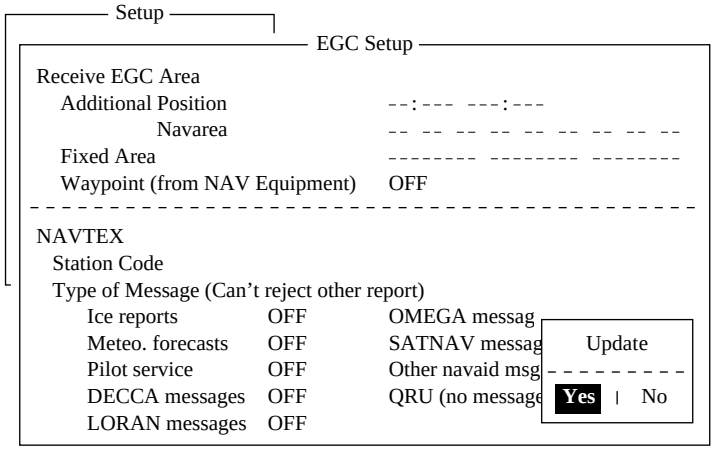
16. Enter the navtex station code (A-Z) of the navarea. For details about navtex stations, consult the operator's manual of the navtex receiver.

17. Press [Enter] to close the Station Code window.

18. Using the up/down arrow keys enable/disable reception of NAVTEX broadcasts and press [Enter].

    Note that navtex message types "Coastal navigational information", "Meteorological warning" and "Search and rescue alert" (they do not appear on the display) cannot be deleted since they are considered essential to navigation.

19. Press [Esc] to open the update window.



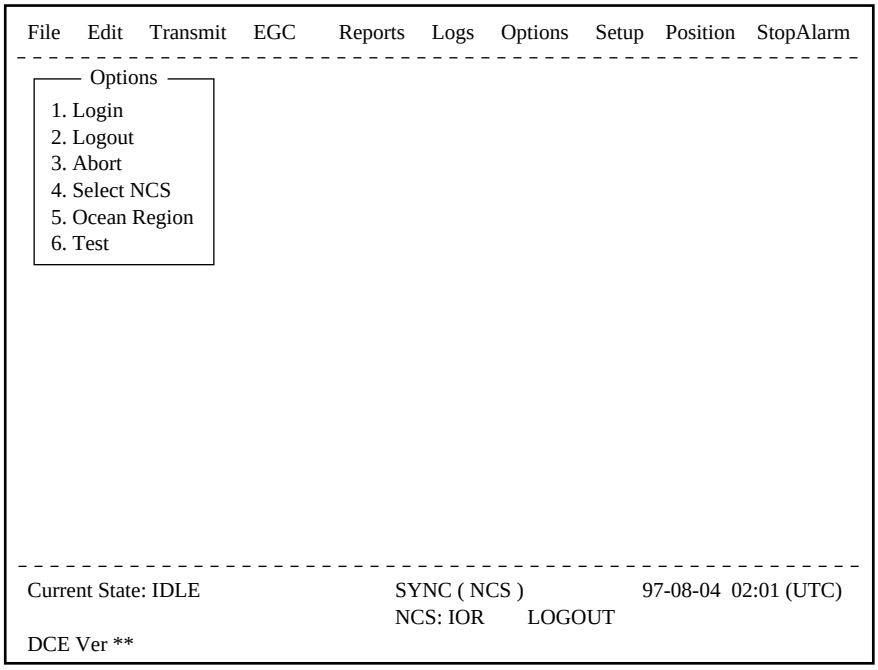
20. Press [Enter] to select "Yes" and register all EGC settings.

21. Press [Esc] to return to the standby display.6.18 Login and Logout

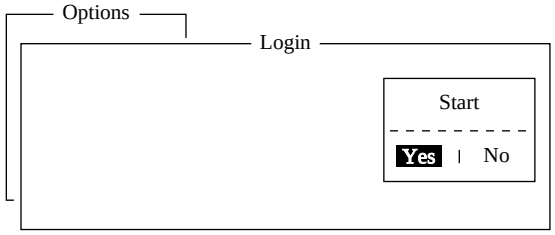
6.18 Login and Logout

1. Login

1. Confirm that “SYNC (NCS)” appears at the bottom of the screen.
2. Press [F7] to display the Options menu.

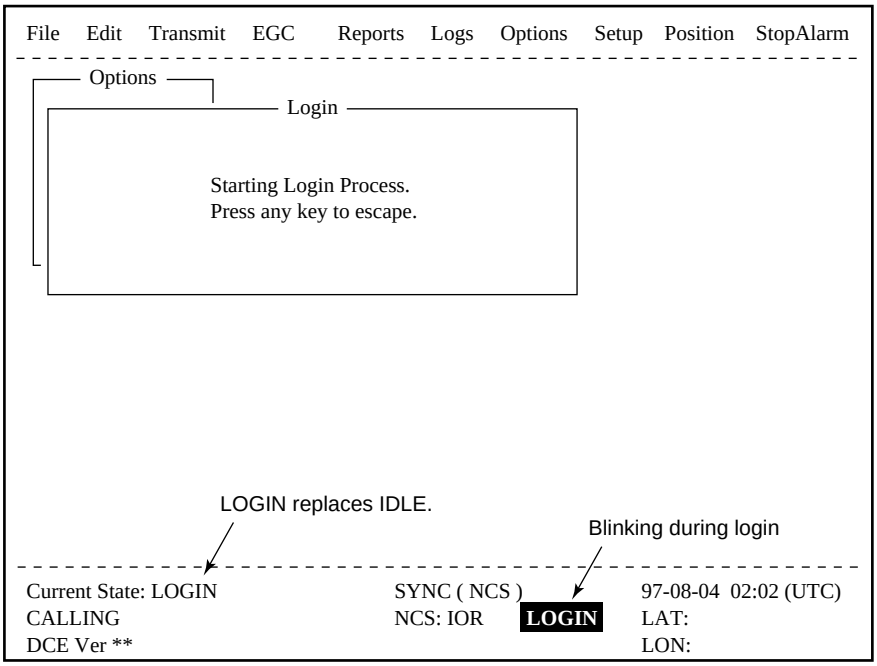


3. Press [1] to display the Login screen.



Note: The communication unit must be idle to login. When it is not idle, “Communication Unit is not IDLE now. Cannot start login.” appears. Press any key to return to the standby display. Wait until the communication unit becomes idle.

4. Press [Enter] to start login.
5. LOGIN begins and the screen should now look something like the figure below. The indication LOGIN appears in blinking reverse video.

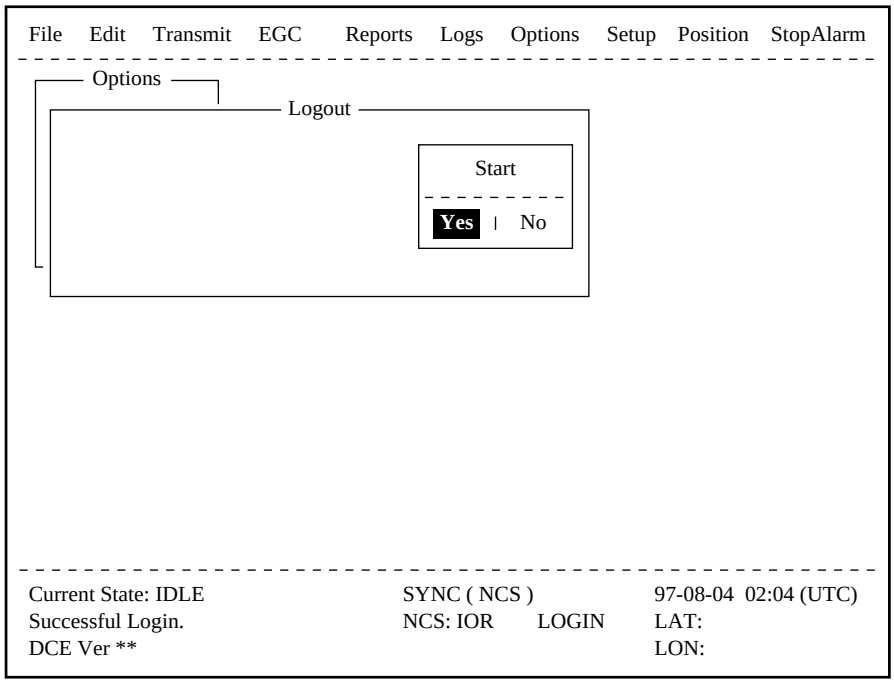


6. When login is completed, “Successful login” appears. The communication unit goes into Idle state, LOGIN stops blinking and the ocean region you logged in with appears on the screen.
7. Press any key to return to the standby display.

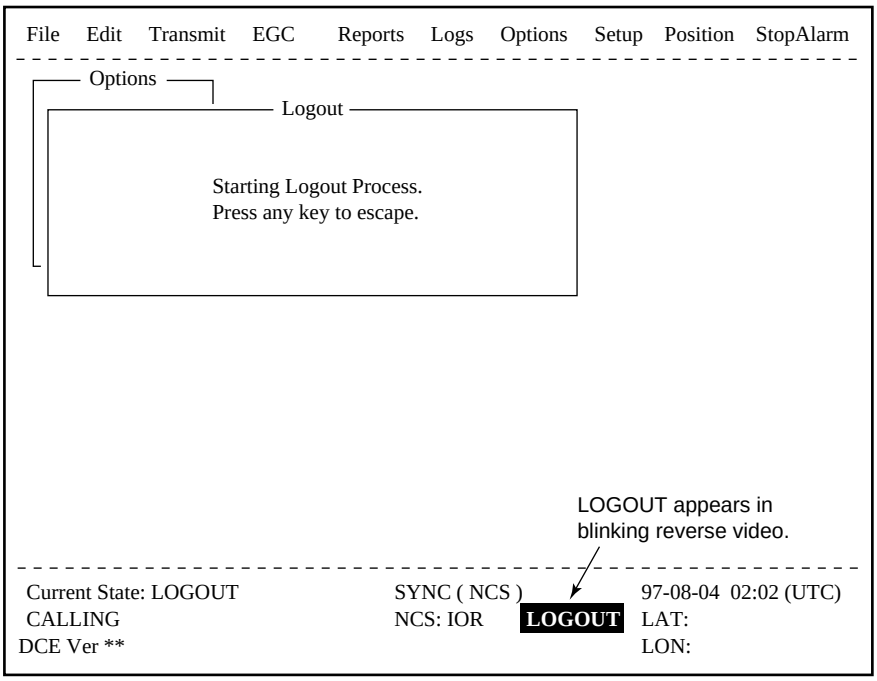
2. Logout

1. Press [F7] to display the Options menu.
2. Press [2] to display the logout screen.

Note: The communication unit must be idle to logout. When it is not idle, “Communication Unit is not IDLE now. Cannot start logout.” appears. Press any key to return to the standby display. Wait until the communication unit becomes idle.

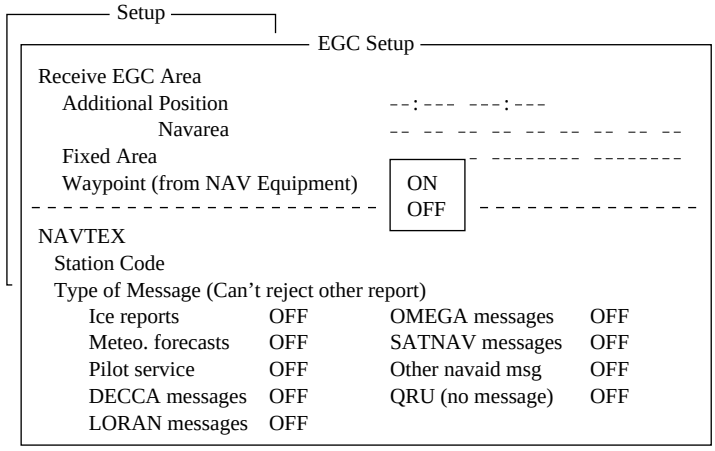


3. Press [Enter] to start logout. Logout begins and the screen now looks something like the figure below.



4. When logout is completed, “Successful logout” appears. The Current State returns to IDLE and LOGOUT stops blinking.

5. Now you can turn off the power of the FELCOM 12.



6. Select ON to receive broadcasts for the area of a destination waypoint selected on the navigation device.

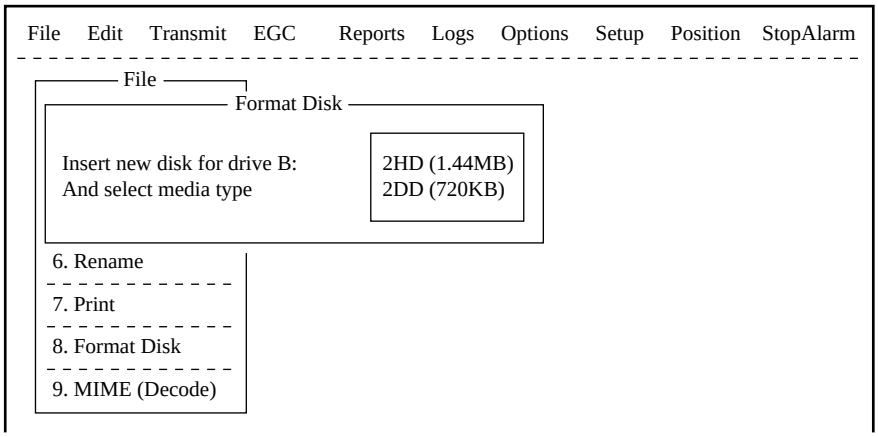
7. Press [Enter] to close the Waypoint window.

6.19 Saving a Message

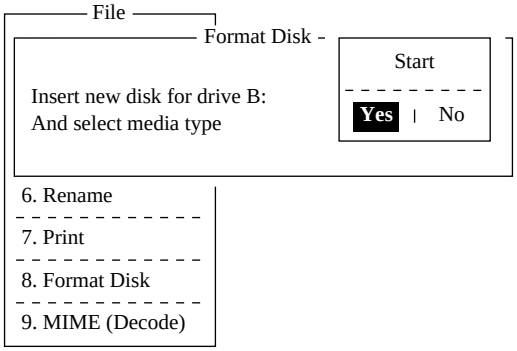
1. Formatting a floppy disk

To save a message to a floppy disk the disk must be formatted. Formatting prepares the disk no information can be written to its surface.

1. Insert a blank floppy disk into the disk drive.
2. Press [F1].
3. Press [8].



4. Select media type.
5. Press [Enter].



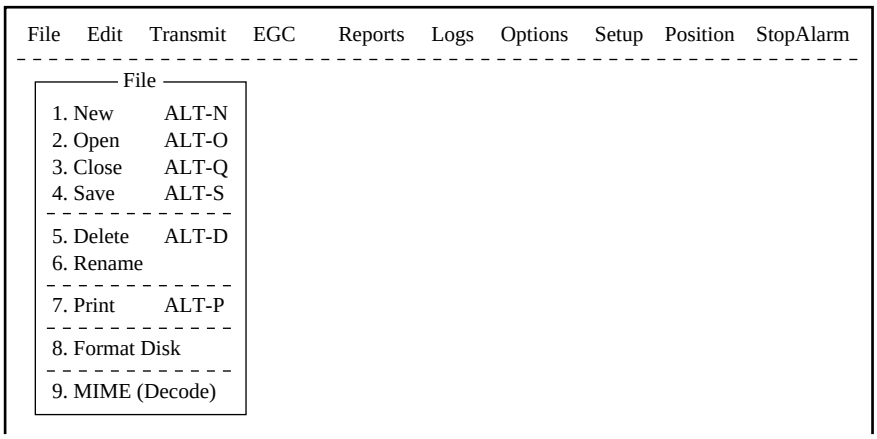
6. Select “Yes” to format the disk. Press [Enter] to begin formatting.

Note: If there is no floppy disk in the drive, “FD not inserted in drive. Press any key to escape.” appears on the display.

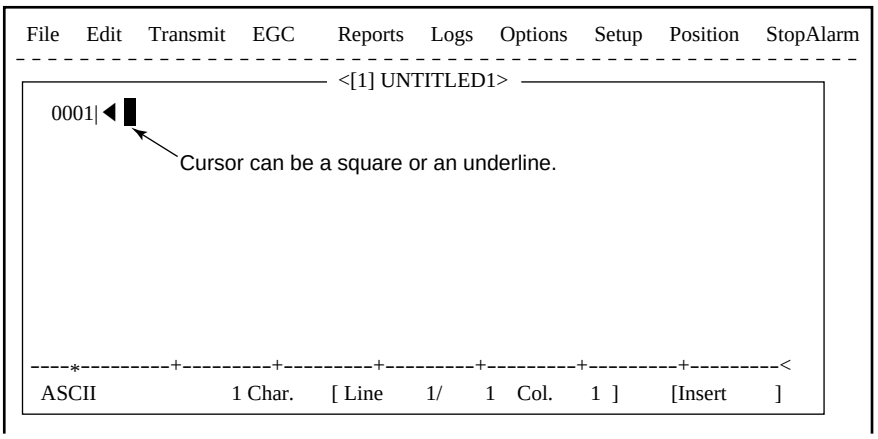
7. “Now Formatting” appears on the screen during formatting.
8. When formatting is completed (about one minute), “Formatting Completed.” appears on the display. You can now return to the standby display by pressing any key.

2. Preparing a routine message

1. Press [F1] to display the File menu.



2. Press [Enter] to select New. The display should now look something like the figure below.



3. The cursor is on the first line. Type your message.

3. Preparing a confidential message

If communicating with another FELCOM 12, you can prepare a confidential message by entering “S???-addressee code(-password):” in first line of message text. You can also receive confidential messages containing this header from a land subscriber or any MES which uses the FELCOM 12.

There are two types of confidential messages: message with addressee code and message with both addressee code and password.

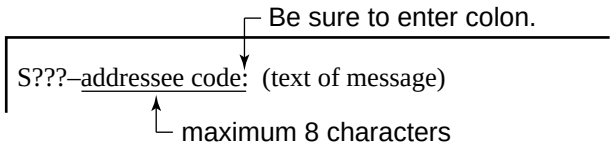
When a FELCOM 12 receives a confidential message, the message is not displayed and printed immediately. To display or print the contents of a confidential message, the recipient executes the key sequences shown on page 6-51.

Explanation of addressee code and password

Caller and recipient agree beforehand on both the addressee code and the password. The addressee code can be the title of the recipient; for example, CAPTAIN. The password could be the classification of the message; for example, SECRET.

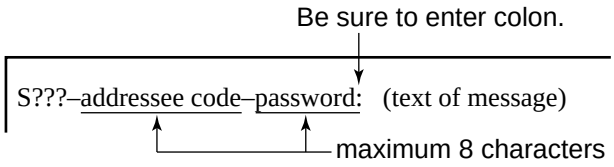
Preparing message with addressee code

Type S, 3 question marks, hyphen, addressee code, colon followed by text of message.



Preparing message with both addressee code and password

Type S, 3 question marks, hyphen, addressee code, hyphen, password, colon followed by text of message.



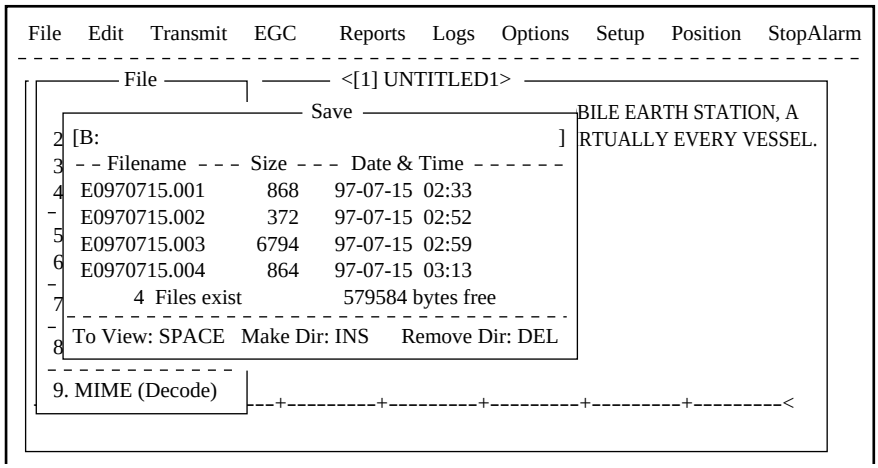
When the recipient receives a message with both addressee code and password, he must enter the password to view contents of the message.

4. Saving a message

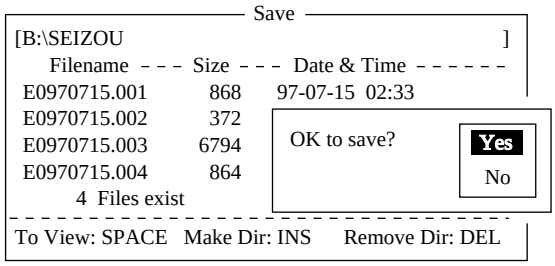
You can save a message two ways: Save it without losing your place on the screen (called “save”), or save it before clearing the screen (called “close”).

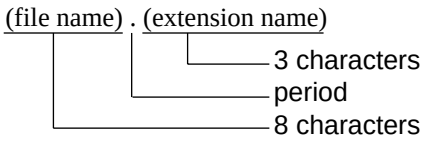
Save message, retain place on screen

1. Press [F1] to display the File menu.
2. Press [4]. The screen should look something like the Figure below.



3. Enter a file name, up to eight characters with extension name (three characters), as shown below.

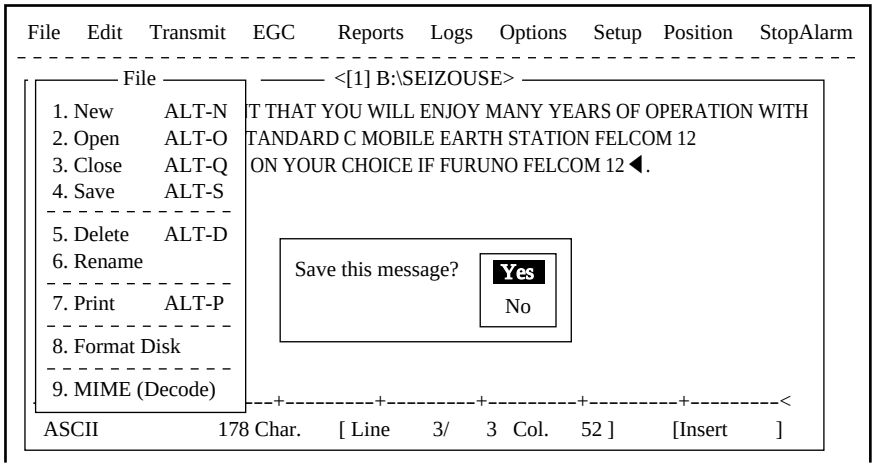




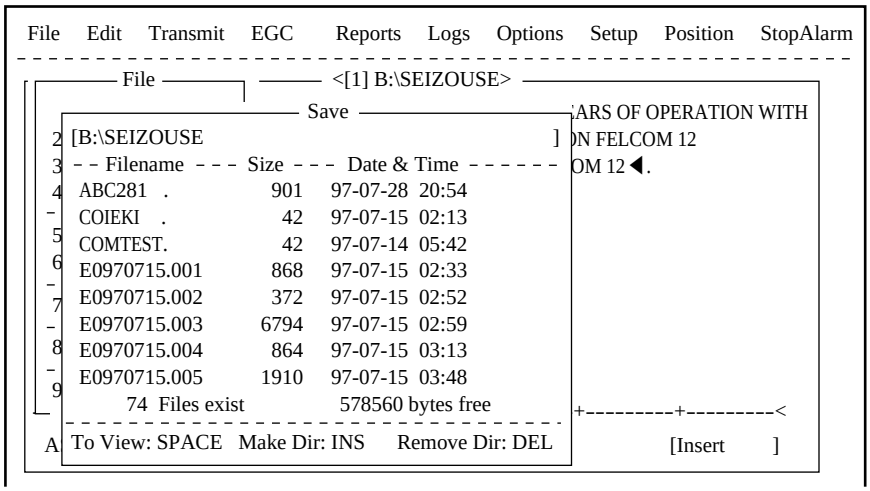
4. Press [Enter]. “SAVING” appears on display.

Save message, clear screen

1. Press [F1] to display the File menu.
2. Press [3]. The prompt “Save this message?” appears on the screen.



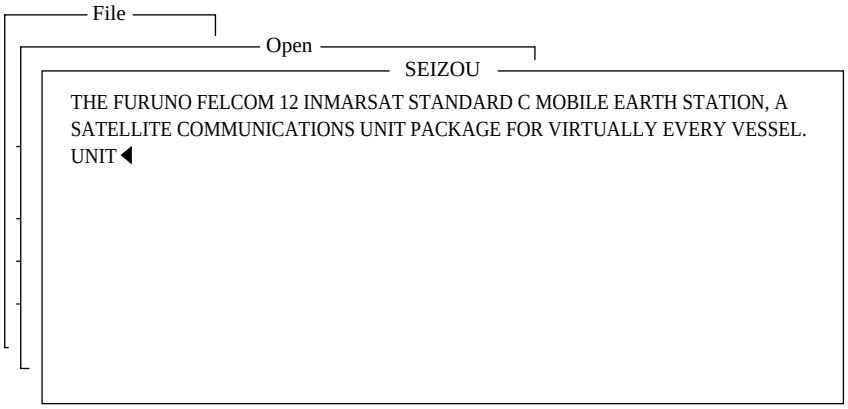
3. Press [Enter].



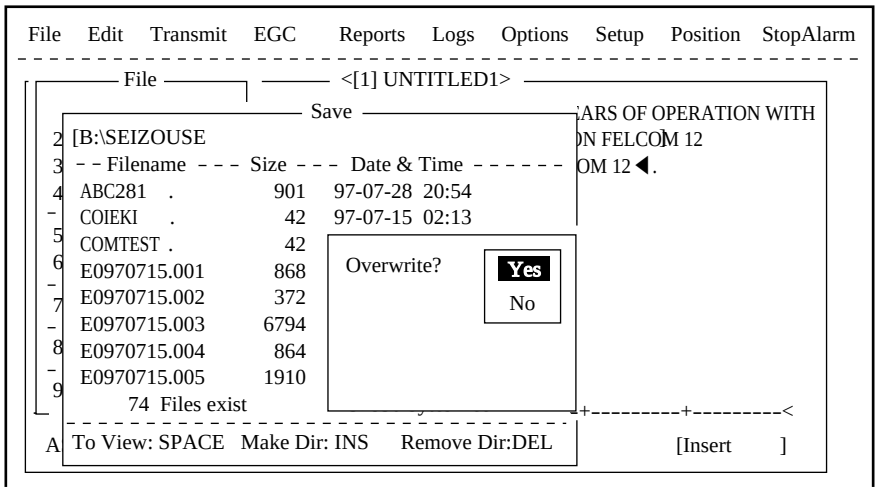
4. Enter a file name.
5. Press [Enter].

5. Opening a file

1. Set the floppy disk containing the file you wish to open in the disk drive.
2. Press [F1] to display the File menu.
3. Press [2]. The screen shows a list of the files stored in the floppy disk.
4. Select a file.
   To view a portion of a file, press the space bar.

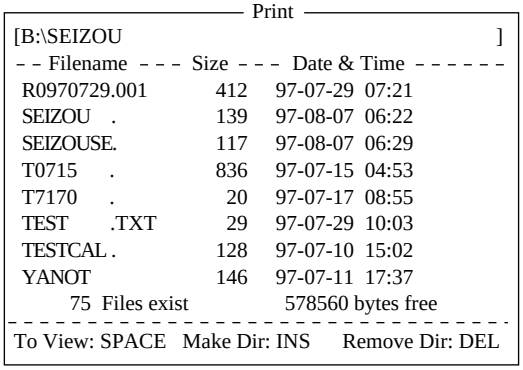


5. Press [Enter].
6. The message “Loading” appears on the screen during loading. A few moments later the contents of the file appear on the screen and the title bar shows the file name. You may repeat the above procedure to load a second file into a working area.



6.20 Printing a File

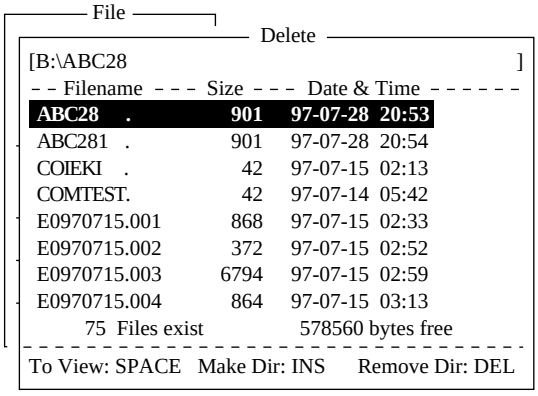
1. Press [F1] to display the File menu.
2. Press [7]. A list of files stored on the disk appears.



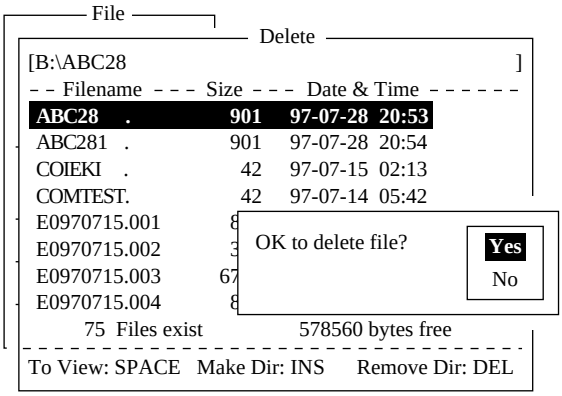
3. Select a file. To get a partial display of the file, tap the space bar.
4. Press [Enter].

6.21 Deleting a File

1. Press [F1] to display the File menu.
2. Press [5]. A list of files stored on the disk appears.



3. Select the file you want to delete. To verify the contents of that file, tap the space bar.
4. Press [Enter]. The prompt “OK to delete file?” appears.

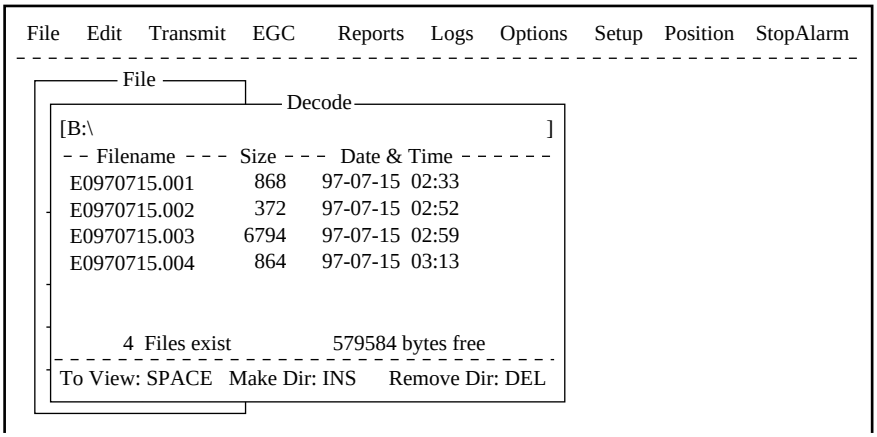


5. Press [Enter] to delete the file, or press [↓] and [Enter] to escape.

6.22 MIME (Multipurpose Internet Mail Extensions)

When you can't read an attached file in the Log menu, you can decode it with MIME as follows:

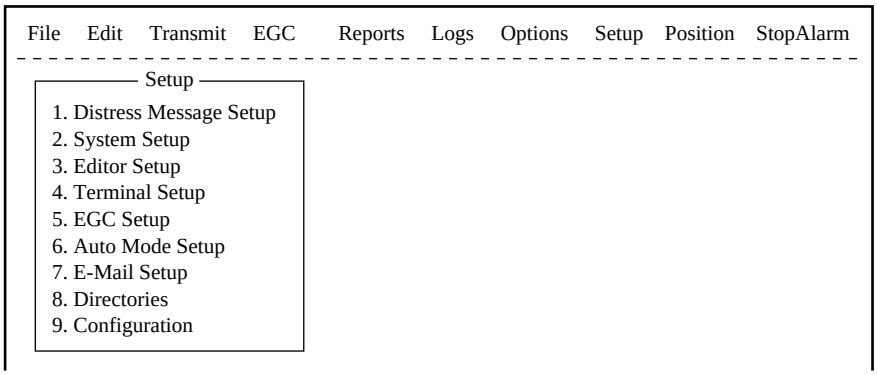
1. Press [F1].
2. Press [9].



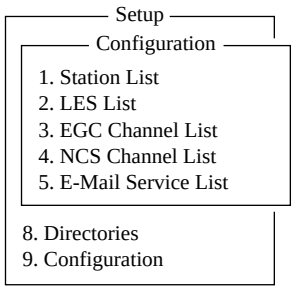
3. Select the file you want to decode.
4. Press [Enter].

6.23 Programming the LES list

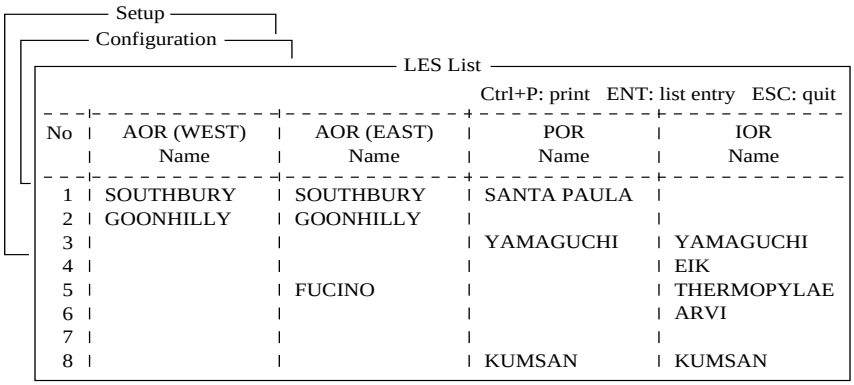
1. Press [F8] to display the Setup menu.



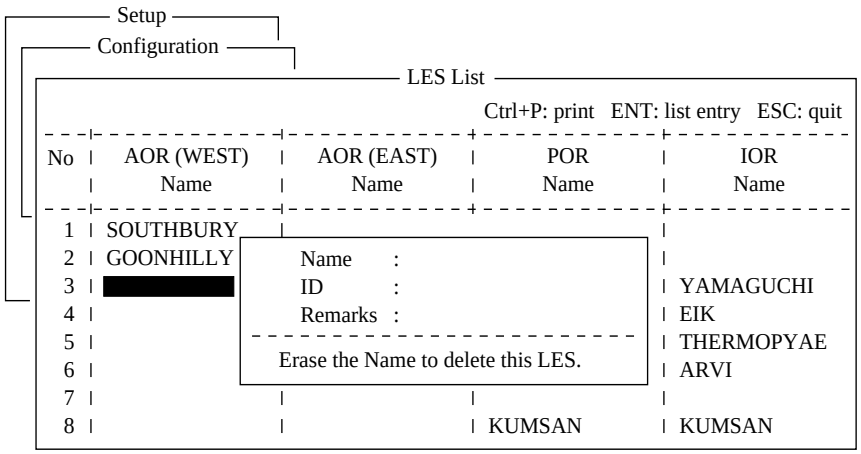
2. Press [9] to display the Configuration menu.



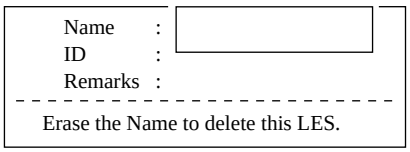
3. Press [2] to display the LES List.



4. With the arrow keys place the cursor where no data is entered.
5. Press [Enter].



6. Press [Enter] to open the text window.

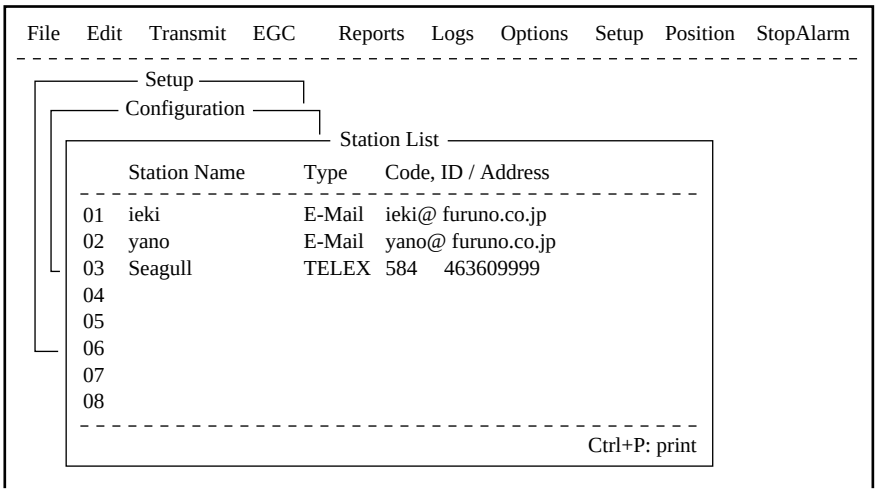


7. Enter LES name (maximum 15 characters).
8. Press [Enter].
9. Press [↓] to advance the cursor to the ID line.
10. Press [Enter].
11. Enter LES ID. The table on page 6-57 shows all current LES IDs.
12. Press [Enter].
13. Press [↓] to send the cursor to the Remarks line.
14. If desired, enter remarks (up to 20 characters).
15. Press [Esc] to register LES.
16. To return to the standby display, press [Esc] three times.

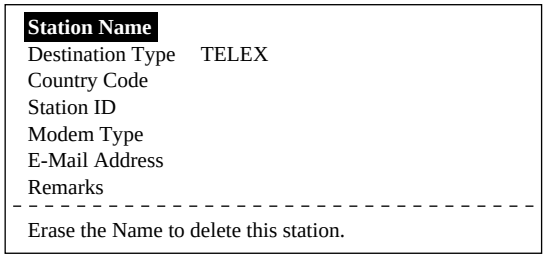
6.24 Programming the station list

The FELCOM 12 provides an “address book” for programming 64 station IDs.

1. Press [F8] to display the Setup menu.
2. Press [9] to display the Configuration menu.
3. Press [1] to display the Station List.

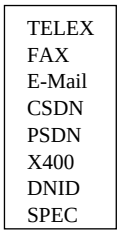


4. Operate [↓] to place the cursor on a blank line.
5. Press [Enter].



6. Press [Enter] to open the window for station name entry.
7. Enter name of station, using up to 15 characters.
8. Press [Enter] to close the window.
9. Press [↓] to send the cursor to the Destination Type line.

10. Press [Enter] to open the destination type window.



TELEX: Telex communication

FAX: Facsimile service
- to an office facsimile machine

E-Mail: E-mail (electronic mail) Service

CSDN: Circuit Switched Data Network-not used.

PSDN: Packet Switched Data Network
-to an office computer via a data network using X.25 standard.

X400: For future use

DNID: Data Network ID -not used.

SPEC: Ship-to shore requests for safety service, accessed by using special 2-digit codes (See Note 2 below.)

11. Set up according to Destination Type selection. The steps which follow show how to set up for Telex.

12. Press [Enter] to close the destination type window.

13. Press [↓] to advance the cursor to the Country Code line for TELEX, FAX, PSDN.

14. For ship-to-shore telex, enter international telex country code; ship-to-ship telex, enter ocean region. A list of international telex country codes begins on page 6-58.

    Ocean Region

    AOR-East: 581
    POR: 582
    IOR: 583
    AOR-West: 584

15. Press [Enter] to close the window.

16. Press [↓] to send the cursor to the Station ID line.

17. Press [Enter] to open the window for station ID entry.

18. Enter telex subscriber number (for land) or MES Inmarsat Mobile Number (for ship). Up to 15 characters, including space, can be entered.

19. Press [Enter] to close the window.

20. Press [↓] to advance the cursor to the Remarks line.

21. Press [Enter] to open the window for remarks entry.

22. If desired, enter remarks (up to 20 characters).

23. Press [Enter] to close the window.

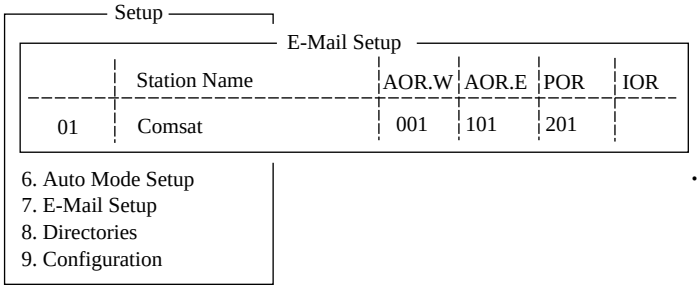
24. To return to the standby display, press [Esc] three times.

6.25 E-mail Setup

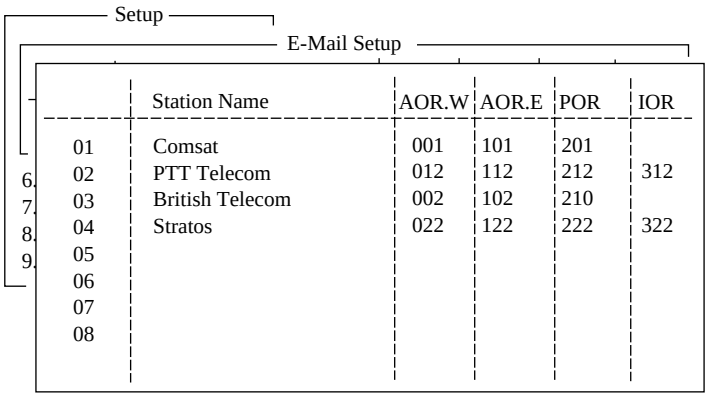
Select the LES where to forward E-mail. Also,you will need to register with the LES to get E-mail services.

1, Press [F8] to display the Setup menu.

2. Press [7] to display E-mail Setup screen.

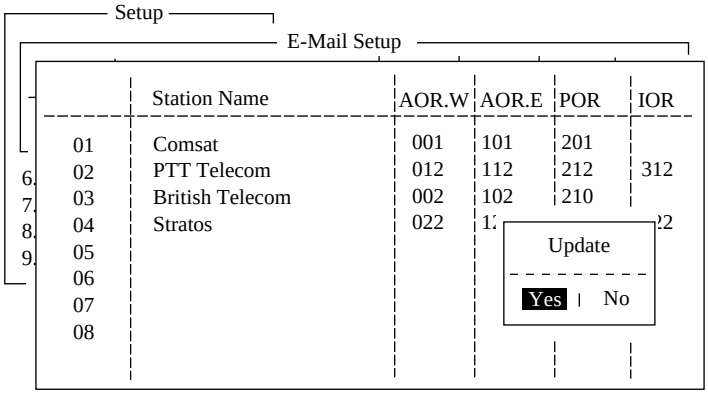


3. Press [Enter] to open the selection window.



4, Selecter the LES where to forward E-mail.

5. Press [Enter] to the update window.



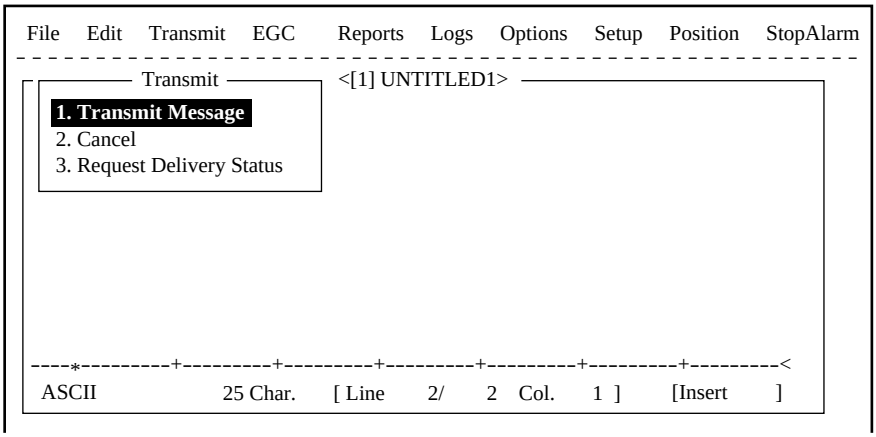
6. Press [Enter] again.

7. Press [ESC] to return the stand by display.

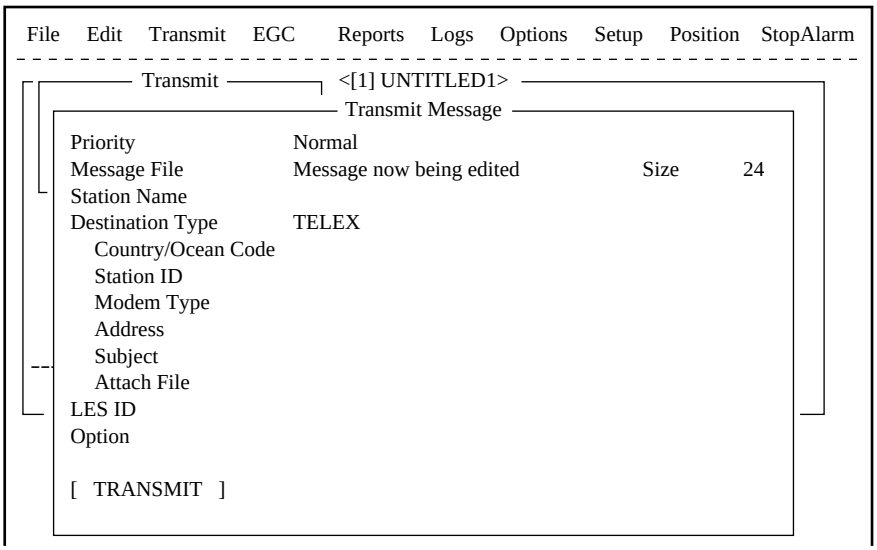
6.26 Transmitting prepared message

1. Prepare message on the screen.

2. Press [F3] to display the Transmit menu.



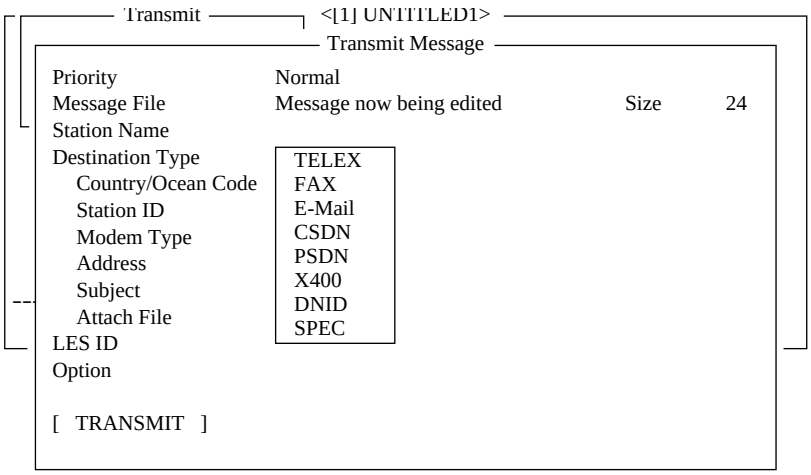
3. Press [1] to display the Transmit Message menu. The cursor is on the Priority line and "Normal" is selected.



Note: An error message may appear under the conditions below:
Unit is not logged-in. -Error message: Cannot start to send. (not logged-in)
Unit operates as an EGC-only receiver-Error Message: Cannot start to send. (EGC receiver)

The message file line displays "Message now being edited" when a file is currently displayed.

4. Press [↓] three times to place the cursor on the Destination Type line.
5. Press [Enter] to open the selection window.
6. Select Destination Type among “TELEX”, “FAX” or “E-Mail”.



7. Press [Enter] to close selection window.
8. Follow instructions below for telex, or go to next page for FAX or E-Mail.

Destination type: Telex

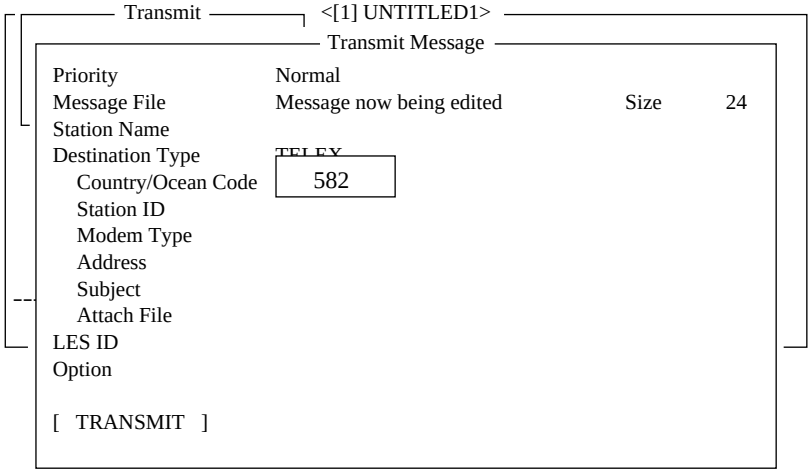
(1) Press [↓] to place the cursor on the Country/Ocean Code line.

(2) Press [Enter] to open the window for country/ocean code entry.

(3) Type either international telex country code of recipient (ship-to-shore) or ocean region (ship-to-ship). A list of international telex country codes begins on page 6-58

Ocean Region

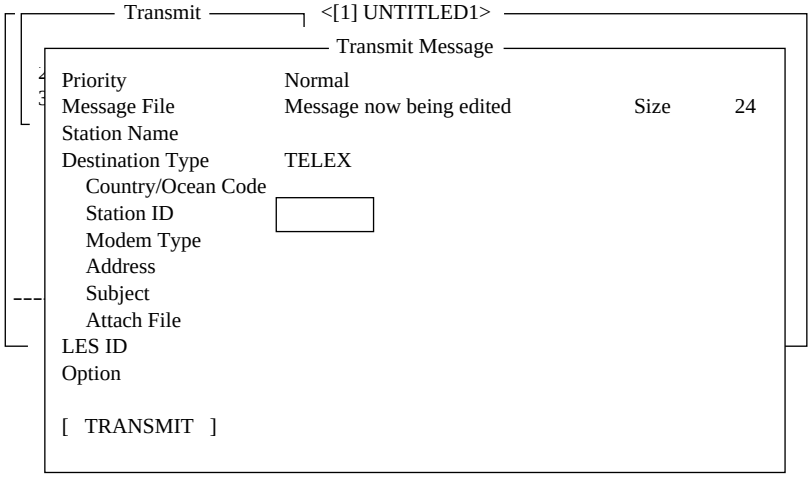
AOR-East:	581
POR:	582
IOR:	583
AOR-West:	584



(4) Press [Enter] to close the window.

(5) Press [↓] to send the cursor to the Station ID line.

(6) Press [Enter] to open the window for station ID entry.



(7) Type either recipient's telex subscriber number (ship-to-shore) or receiving MES INM (ship-to-ship).

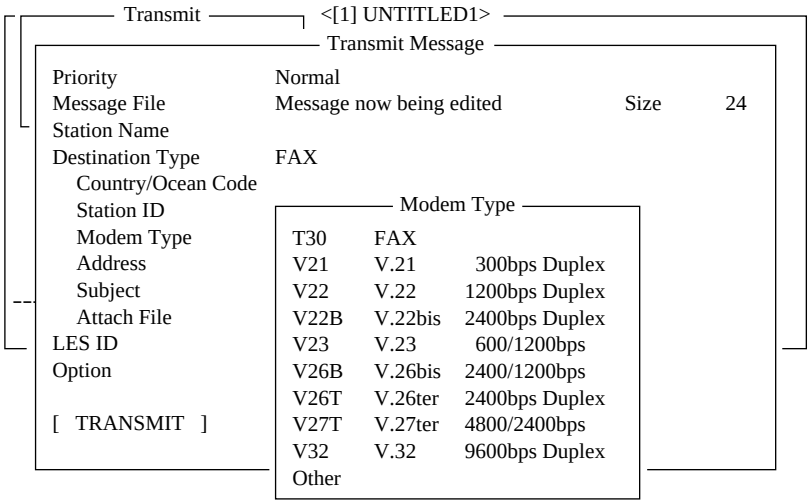
(8) Press [Enter] to close the window.

(9) Go to step 9 at the top of page 6-48.

Destination type: FAX

(1) Press [↓] to advance the cursor to the Modem Type line.

(2) Press [Enter] to open the selection window.



(3) Select "T30".

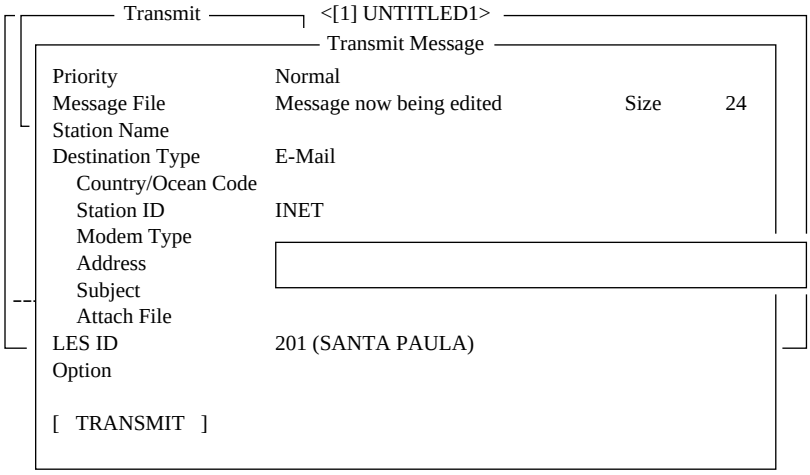
(4) Press [Enter] to close the selection window.

(5) Go to step 9 at the top of page 6-48.

Destination type: E-mail

(1) Press [↓] to advance the cursor to the Address line.

(2) Press [Enter] to open the window for address entry.

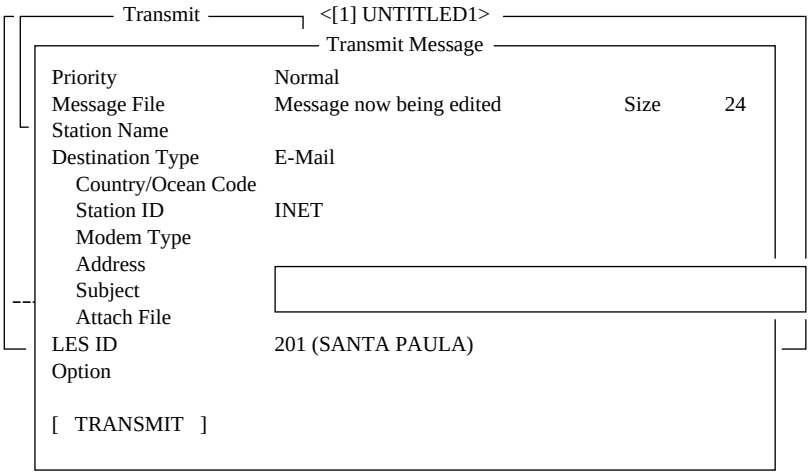


(3) Type recipient's E-mail address.

(4) Press [Enter] to close the window.

(5) Press [↓] to advance the cursor to the Subject line.

(6) Press [Enter] to open the window for subject entry.

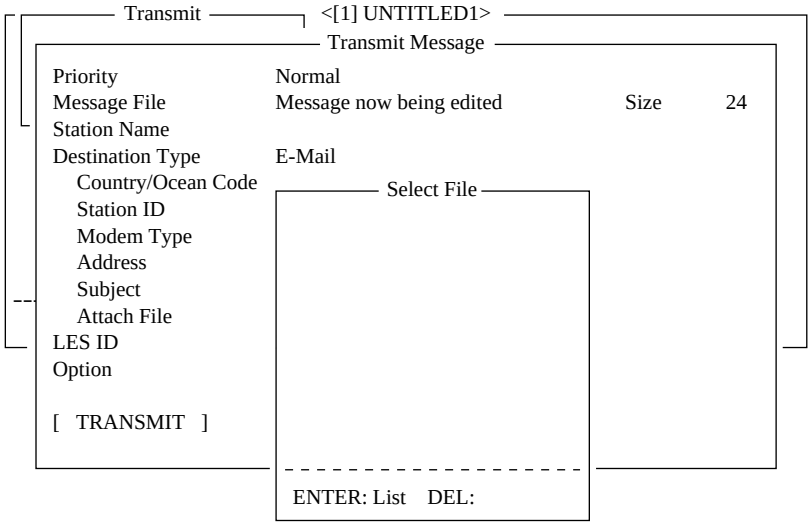


(7) Type subject.

(8) Press [Enter] to close the window.

(9) Press [↓] to advance the cursor to the Attach File line.

(10)Press [Enter] to open the select File window.



(11)Press [Enter] to open the file list window.
To change drive on a PC, move the cursor to the command line, type drive name (for example, “A”), and move the cursor to anywhere in the File Name column.

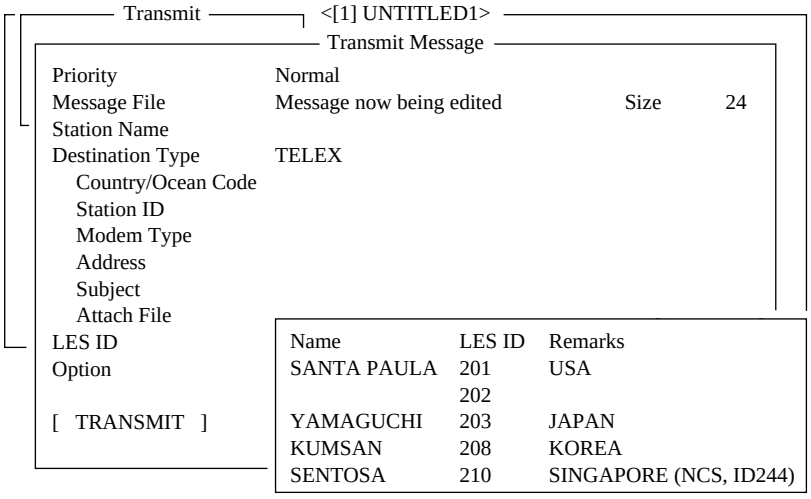
(12)Press [Enter] to select file and close the file list window.

(13)Press [Esc] to close the select file.
Go to step 9 at the top of the next page.

procedure for transmitting a message (con’t from page 6-45)

9. Press [↓] to advance the cursor to the LES ID line.

10. Press [Enter] to open the selection window.



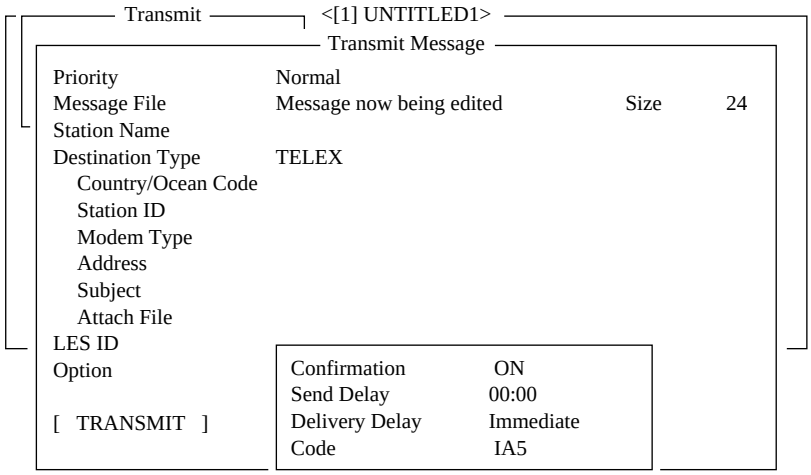
Note: If the LES ID entered is invalid, “Cannot use this LES. Please check network configuration.” appears.

11. Select LES ID.

12. Press [Enter] to close the selection window.

13. Press [↓] to send the cursor to the Option line.

14. Press [Enter] to open the option window.



15. Press [Enter] to open the selection window.

16. To receive confirmation from the LES when message has been delivered to recipient, select ON. If not required, select OFF.

17. Press [Enter] to close the selection window.

18. Press [↓] to send the cursor to the Send Delay line.

19. Press [Enter] to open the window for send delay entry.

20. To send a message after a certain delay enter a time up to 99 hours 59 minutes. (The Send Delay is used to time message arrival to suit recipient's office hours.)

21. Press [Enter] to close the window.

22. Press [↓] to go to the Delivery Delay line.

23. Press [Enter] to open the selection window.

24. The Delivery Delay line requests the LES for "Immediate" or "Deferred" transmission to the recipient designated. Select either immediate or deferred. For information on this service, consult with LES to which message is to be sent.

25. Press [Enter] to close the selection window.

26. Press [↓] to send the cursor to the Code line.

27. Select "IA5", "ITA2" or "DATA".
Normally, IA5.

28. Press [Enter] to close the selection window.

29. Press [↓] to place the cursor on TRANSMIT.

30. Press [Enter] to open the start window.

31. Press [Enter] to transmit the message to the message buffer. (To escape, select No and press [Enter].) The message "Message is entered in sending Buffer." appears and the message prepared is printed.

Note: The message buffer can only hold one message. However a second message may be sent to the buffer by assigning a Send Delay to it.

When the message buffer is full, “Cannot enter this message to sending Buffer.” appears to alert you.

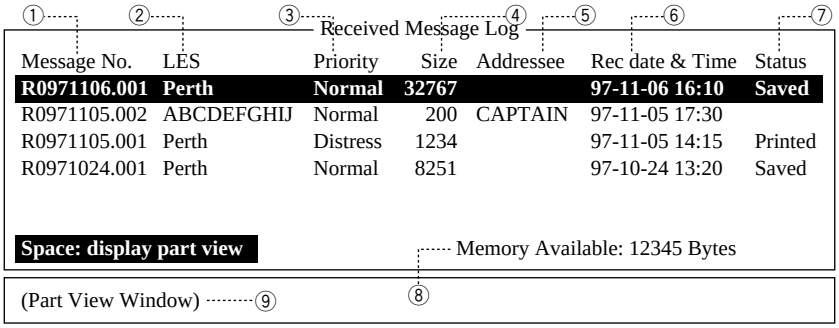
32. Press any key to return to the standby display.

The message(s) will be transmitted according to Send Delay setting. “Current State: SENDING” appears at the bottom of the screen during transmission.

If the message was transmitted successfully “Successful Sending message” appears and its particulars are sent to the Display Log.

6.27 Displaying receive messages

1. Press [F6].
2. Press [2] to display list of receive messages.



Display message list description

Message No.: Receive message no.

LES: LES name

Priority: Normal or distress

Size: Size of file in bytes

Addressee: Addressee code appears for confidential messages. Nothing appears for routine messages.

Rec date & time: Date and time message was received.

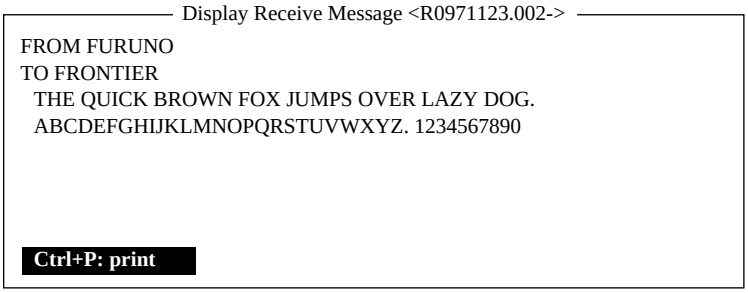
Status: Printed: message printed

Saved: message saved to floppy disk

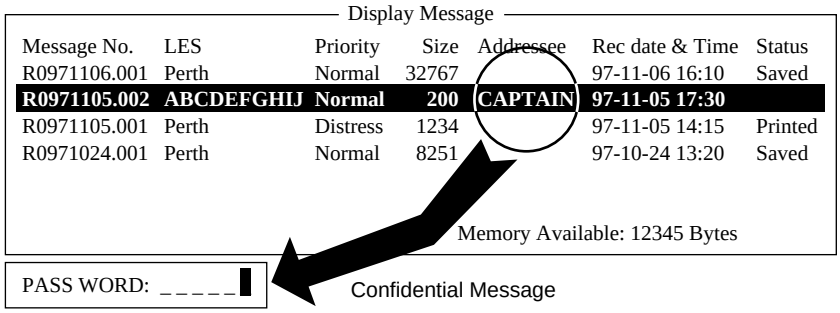
No display: not yet printed confidential message, or printer malfunction

Memory available: Memory available in DTE

3. Select a file. To get a partial display of a file selected, tap the space bar. A part of the file appears in the View Window.
4. Press [Enter] for routine messages and messages with addressee code (no password). Your selection appears on the display.



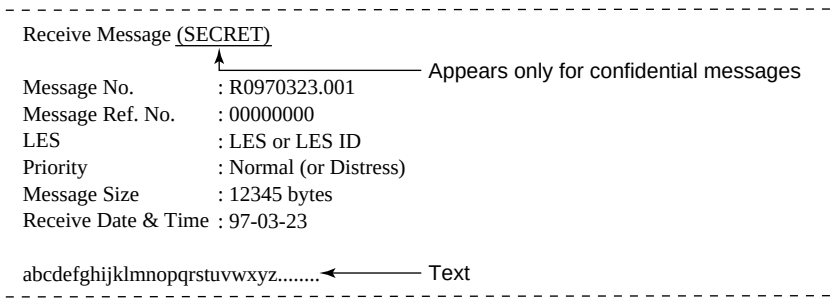
5. For messages with both addressee code and password, a Password window appears. Enter the password corresponding to the addressee code and then press [Enter]. If the password is entered incorrectly an alarm sounds. Reenter the password.



The screen can be scrolled with the up and down arrow keys.

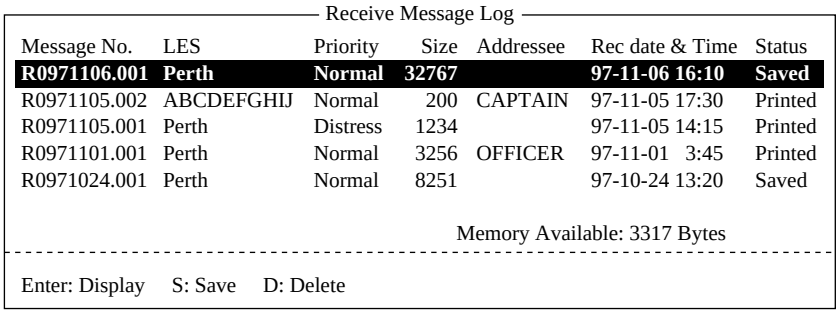
6.28 Printing receive messages

1. Follow steps 1 thru 6 in “Displaying receive messages”.
2. While pressing and holding down [Ctrl], press [P]. The printer starts printing the message on the screen.



6.29 Saving receive messages to a floppy disk

1. Press [F6].
2. Press [2] to display the Receive Message Log.

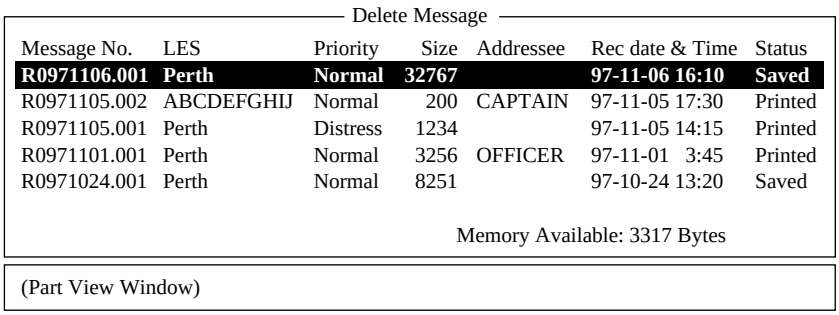


3. Select a file. To display a portion of the file selected, tap the space bar.
4. For confidential messages enter password. This password will also be saved to the floppy disk.
5. Press [Enter] to copy the file to the floppy disk. “Saving to FD” appears during saving.

Note: If a file by that name already exists on the floppy disk, “A file by that name already exists on FD.” appears.

6.30 Deleting receive messages

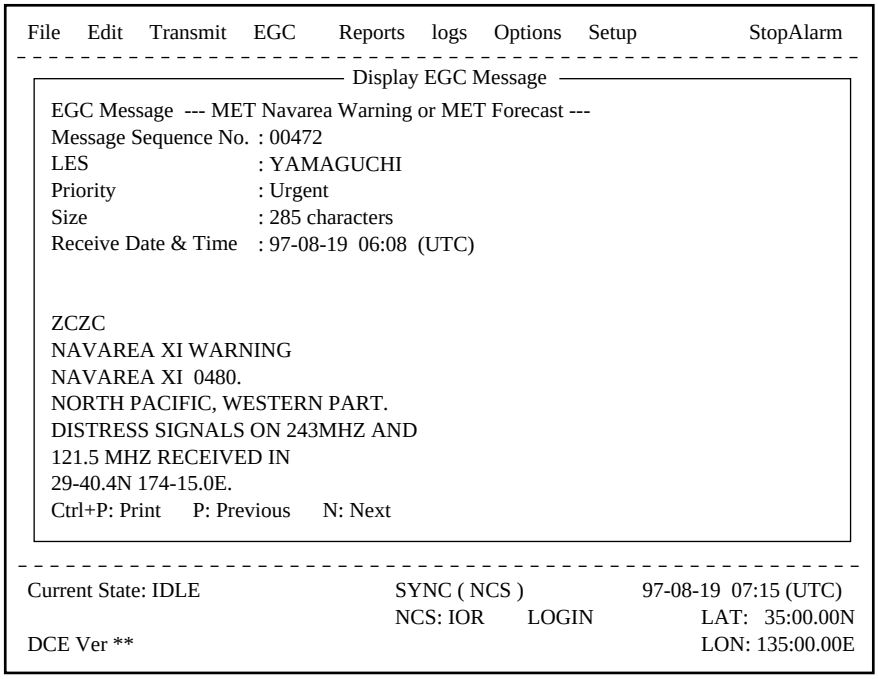
1. Press [F6].
2. Press [2] to display list of receive messages.



3. Select the message you want to delete. To display a part of a message (except confidential messages), tap the space bar.
4. To view a portion of a confidential file, enter the password and then tap the space bar.
5. Press [D]. You are asked to confirm.
6. Press [Enter] to delete the message, or select No and press [Enter] to escape.
7. To return to the standby display, press [Esc] three times.

6.31 Displaying and reprinting EGC messages

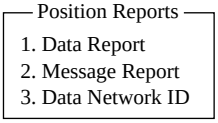
1. Press [F6].
2. Press [3]. The Display EGC Message screen appears.



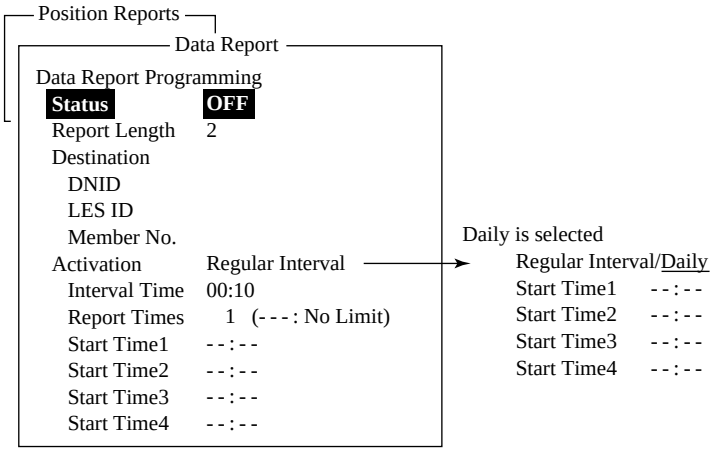
3. To scroll the message, use the up and down arrow keys.
4. To view next and previous messages, use the [N] and [P] keys.
5. To print the message appearing on the display, press and hold down [Ctrl] and press [P]. To stop printing, press [Esc].

6.32 Setting a data report

1. Press [F5] to display the Position Reports menu.



2. Press [Enter] or [1] to display Data Report setting screen.
   The cursor is on the Status line and “OFF” is selected.



3. Press [Enter] to open the selection window.
4. Select “ON” or “OFF”.

   ON: Data report on
   OFF: Data report off

5. Press [Enter] to close the selection window.
6. Press [↓] to advance the cursor to the Report Length line.
7. Press [Enter] to open the selection window.
8. Select “1” or “2”.

   1: Position

   2: Position, speed, bearing, depth

   3: Spare (not used)

9. Press [Enter] to close the selection window.
10. Press [↓] to advance the cursor to the Destination line.
11. Press [Enter] to display the DNID list.
12. Select DNID.
    (LES ID and Member ID are automatically selected with DNID.)
13. Press [Enter] to close the DNID list.
14. Press [↓] to advance the cursor to the Activation line.
15. Press [Enter] to open the selection window.
16. Select “Regular Interval” or “Daily”.
17. Press [Enter] to close the selection window.

18. Press [↓].

- When “Regular Interval” is selected on step 16,

  (1) Press [Enter] to open the window for interval time entry.

  (2) Key in the interval time at Interval Time.

  (3) Press [Enter] to close the window.

  (4) Press [↓].

  (5) Press [Enter] to open the window for report times entry.

  (6) Key in the Report times or select “No limit”.

  (7) Press [Enter] to close the window.

- When “Daily” is selected on step 16,

  (1) Press [Enter] to open the window for start time entry.

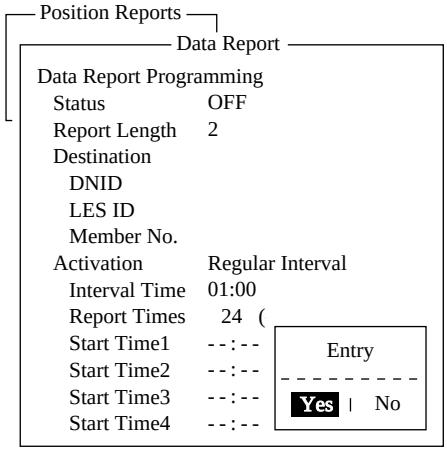
  (2) Key in the start time at Start Time 1.

  (3) Press [Enter] to close the window.

  (4) Press [↓].

  (5) If necessary, key in the start time of Start Times 2-4.

19. Press [Esc] to register the above settings.



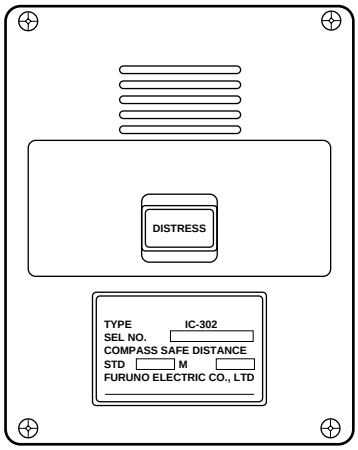
20. Select “Yes”.

21. Press [Enter] to close the Data Report window.

6.33 Transmitting a Distress Alert

1. Press the DISTRESS button on the Distress Alert Unit IC-302. This button requires two independent actions: (1) Open cover on DISTRESS button. (2) Press the DISTRESS button 4 seconds continuously.

   The lamp inside the button flashes and an audible alarm sounds. Four seconds later, the distress alert is transmitted and the lamp lights continuously. When you receive acknowledgment of the distress alert from an LES, the lamp flashes and the audible alarm sounds intermittently.



6.34 LES List and International Telex/Telephone (Facsimile) Country Code List

LES List

LES Name	AOR West	AOR East	IOR	POR
Perth			322	222
Goonhilly	002	102		
Aussaguel		121	321	
Station12	012	112	312	
Blaavand		131		
Eik		104	304	
Tanguua	014	114		
Nakhodka				212
Odessa		107	307	
Sentosa			328	210
Arvi			306	
Buitrage				
Fucino		105	335	
Thermopylae			305	
Jeddah			315	
Yamaguchi			303	203
Santa Paula				201
Sintra		118		
Southbury	001	101		
Ata		110	310	
Kumsan			308	208
Raisting		115	333	
Beijing			311	211
Psary		116	316	
Boumehen			314	
Maadi		103		
Laurentides	032	132		
Umm al Aish		106		
Nonthaburi			319	
NCS	044(Goonhilly)	144(Goonhilly)	344(Thermopylae)	244(Sentosa)

International Telex/Telephone (Facsimile) Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Afghanistan	93	79	
Alaska	1	200	
Albania	355	604	
Algeria	21	408	
American Samoa	684	770	
American Virgin Is.	1	208	Telex calls to former WUI subscribers, insert the figure "9" after the destination code "208".
Andorra	33	590	
Angola	244	991	
Anguilla	1	391	
Antigua & Barbuda	2	393	
Argentina	54	33	Disregard the figure "0" at head of subscriber number.
Armenia	7	684	
Aruba	297	303	Subscriber numbers are 2XXX or 5XXX
Ascension	247	939	Manual calls 3XXX
Australia	61	71	
Australian External Territories	672	766	
Austria	43	47	
Azerbaijani	994	784	
Azores Is.	351	404	Destination code is the same as for Portugal.
Bahamas	1	297	
Bahrain	973	490	
Bangladesh	880	780	
Barbados	1	392	
Belarus	7	681	
Belgium	32	46	
Belize	501	371	
Benin	229	972	
Bermuda	1	290	
Bhutan	975	890	
Bolivia (Rep. of)	591	371	
Bolivia (ENTAL)		309	
Bosnia-Hercegovina	387	600	
Botswana	267	962	
Brazil	55	38	Disregard the figure "0" at head of subscriber number.
British Virgin Is.	1	292	
Brunei Darussalam	673	809	
Bulgaria	359	67	
Burkina Faso	226	978	
Burundi	257	903	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Cambodia	855	807	Kampuchea Rep.
Cameroon	237	970	
Canada	1	21	Disregard the figure "0" at head of subscriber number.
		26	
Canary Is.	34	52	Destination code is the same as for Spain.
Cape Verde	238	993	
Cayman Is.	1	293	
Central Africa Rep.	236	971	
Chad	235	976	
Chile	56	34	TCH subscribers 2XXXXX ENTEL subscribers 5XXXXX TRA subscribers 3XXXXX TECOM subscribers 6XXXXX VTR CM subscribers 4XXXXX
China	86	85	
Christmas Is. (Aus)	672	766	
CIS (formerly USSR)	7	64	
Cocos-Keeling Is.	672	766	
Colombia	57	35	Disregard the figure "0" at head of subscriber number.
Comoros	269	994	Manual calls
Congo	242	981	
Cook Is.	682	772	
Costa Rica	506	376	
Cote d' Ivoire	225	983	Ivory Coast
Croatia	385	599	
Cuba	53	28	
Cyprus	357	605	
Czechoslovakia	42	66	
Denmark	45	55	
Diego Garcia	246	938	
Djibouti	253	979	
Dominica	1	394	
Dominican Rep.	1	201	RCA subscribers 4XXXXX
		202	For subscriber number beginning with 346, disregard "346" at head of subscriber number.
		241	AGEM IR subscribers 61XX
Ecuador	593	308	
Egypt	20	91	
El Salvador	503	373	
Estonia (formerly USSR)	372	537	
Ethiopia	251	980	
Falkland Is. (Malvinas)	500	306	
Faroe Is.	298	502	
Fiji	679	701	
Finland	358	57	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
France	33	42	
French Guiana	594	300	
French Polynesia	689	702	
Gabon	241	973	
Gambia	220	996	
Georgia	7	683	
Germany (Fed. Rep. of)	49	69	formerly East Germany
	49	41	formerly West Germany
Ghana	233	94	
Gibraltar	350	405	
Greece	30	601	
Greenland	299	503	
Grenada	1	395	
Guadeloupe	590	299	
Guam (RCA)	671	700	
Guatemala	502	372	
Guiana	594	300	
Guinea Conakry	224	995	Manual calls
Guinea Bissau	245	969	
Guyana	592	295	
Haiti	509	203	RCA subscribers 9XXX
		704	RCA subscribers 8XXX or 2968XX
		705	ITT subscribers 743XXX
Hawaii	1	708	WUI subscribers 63XXX or 63XXXX
		709	WUH subscribers 39XXXX
		(773)	Telex calls to HTC subscribers can be made using Semi-automatic calls.
Honduras	504	374	
Hong Kong	852	802	
Hungary	36	61	
Iceland	354	501	
India	91	81	
Indonesia	62	73	Disregard the figure "0" at head of subscriber number.
Iran	98	88	
Iraq	964	491	
Ireland	353	500	
Israel	972	606	Disregard the figure "0" at head of subscriber number.
Italy	39	43	
Jamaica	1	291	
Japan		72	KDD (for 5 digits)
	81	720	NTT
Jordan	962	493	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Kazakhstan	7	785	
Kenya	254	987	
Kiribati	686	761	Subscriber numbers are 770XX
Korea (Demo, People's Rep. of)	850	(899)	
Korea (Rep. of)	82	801	
Kuwait	965	496	
Kyrgyzstan	7	788	
Lao	856	804	
Latvia (formerly USSR)	371	538	
Lebanon	961	494	
Lesotho	266	963	
Liberia	231	997	
Libya	21	901	
Liechtenstein	41	45	
Lithunia (formerly USSR)	370	539	
Luxembourg	352	402	
Macao	853	808	
Macedonia	389	597	
Madagascar	261	986	Subscriber number beginning with 4, 5, 7, 8 and 9 can be reached by Manual Calls.
Madeira Is.	351	404	Destination code is the same as for Portugal.
Malawi	265	904	
Malaysia	60	84	
Maldives Is.	960	896	
Mali	223	985	
Malta	356	406 403	Subscriber number beginning with 11XX can be reached by Semi-automatic calls.
Mariana Is.	671	760	
Marshall Is.	692	765	
Martinique	596	298	
Mauritania	222	974	
Mauritius	230	966	
Mexico	52	22	Disregard the figure "0" at head of subscriber number.
Micronesia	691	764	
Moldova	373	682	
Monaco	33	42	Destination code is the same as for France.
Mongolia	976	800	
Montserrat	1	396	
Morocco	21	407	
Mozambique	258	992	
Myanmar (formerly Burma)	95	83	
Namibia	264	908	
Nauru	674	775	

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Nepal	977	891	
Netherlands	31	44	
Netherlands Antilles	599	390	
New Caledonia	687	706	
New Zealand	64	74	
Nicaragua	505	375	
Niger	227	975	2XXXX other numbers are for Semi-automatic calls.
Nigeria	234	905	
Niue Is.	683	776	
Northern Mariana Is.	670		
Norfolk Is.	672	766	
Norway	47	56	
Oman	968	498	
Pakistan	92	82	
Palau	680	763	
Panama	507	377	TRT subscribers
		378	AACR subscribers
		379	INTEL subscribers
Papua New Guinea	675	703	
Paraguay	595	305	
Peru	51	36	
Philippines	63	75	PHILCOM subscribers 2XXXX RCPI subscribers 7XXXX GMCR subscribers 4XXXX ETPI subscribers 6XXXX CAPWIRE subscribers 1XXXX For PTT subscribers, insert the figure "8" after the destination code "75".
Poland	48	63	Disregard the figure "0" at head of subscriber number.
Portugal	351	404	
Puerto Rico	1	205	RCA subscribers 2XXX
		206	ITT subscribers 345XXX
		207	C&W, WUI subscribers
		209	ACPR (PRCA) subscribers
Qatar	974	497	
Reunion	262	961	Subsciriber numbers are 916XXX
Romania	40	65	Disregard the figure "0" at head of subscriber number.
Russian Federation	7	64	
Rwanda	250	909	
Saipan	670	760	
San Marino	378	505	
Sao Tome & Principe	239	967	Manual calls

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Saudi Arabia	966	495	
Senegal	221	906	
Seychelles	248	965	
Sierra Leone	232	998	
Singapore	65	87	
Slovak	42	66	
Slovenia	386	598	
Solomon Is.	677	778	
Somalia	252	900	
South Africa	27	95	Cape Town subscribers XXXXXX Bophuthatswana subscribers 08XXXX Transkei subscribers 09XXX
Spain	34	52	
Spanish North Africa	34	52	
Sri Lanka	94	803	
St. Helena	290	(960)	Manual calls 4XXX
St. Kitts & Nevis	1	397	
St. Lucia	1	398	
St. Pierre & Miquelon	508	204	
St. Vincent & the Grenadines	1	399	
Sudan	249	984	
Suriname	597	304	
Swaziland	268	964	
Sweden	46	54	
Switzerland	41	45	
Syria	963	492	
Tajikistan	7	787	
Taiwan	886	769	
Tanzania	255	989	
Thailand	66	86	
Togo	228	977	
Tokelau	690	762	
Tonga	676	777	
Trinidad & Tobago	296	294	
Tunisia	21	409	
Turkey	90	607	
Turkmenistan	7	789	
Turks & Caicos Is.	1	296	
Tuvalu	688	774	
U. A. E.	971	893	
Abu Dhabi			2XXXX, 3XXXX, 5XXXX
Ajman			695XX
Dubai			4XXXX
Fujairah			8XXXX
Ras Al Khaimah			9XXXX

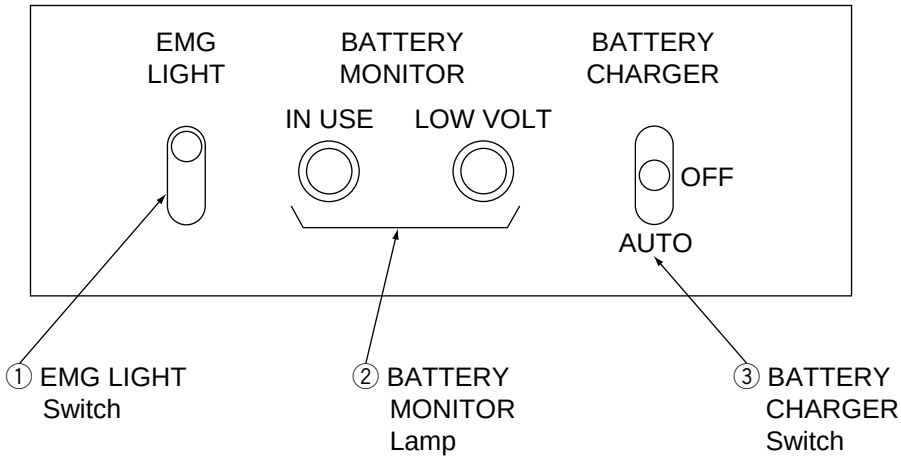
Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Sharjah			68XXX
Umm Al Qaiwain			697XX
Uganda	256	988	
Ukraine	7	680	
United Kingdom	44	51	
United Arab Emirates	971	893	
Upper Volta	226	978	Same as "Burkina Faso".
Uruguay	598	32	
Uzbekistan	7	786	
U. S. A.	1	23	CCI subscribers 7XXXXXX ITT subscribers 4XXXXX, 4XXXXXX, 4XXXXXXXXX RCA subscribers 2XXXXX WUI subscribers 6XXXX, 6XXXXX, 6XXXXXX
U. S. A. (Mainland)		23	TRT subscribers 1XXXXX, 1XXXXXXXXX FTCC subscribers 8XXXX, 8XXXXX GRPHNET subscribers 36XXXXX, 37XXXXX For WUT subscribers, insert the figure "0" after the destination code "23".
		25	Telex calls to TWX subscribers whose numbers do not contain "0" as the third figure of the 10 figure code can be made as Semi-automatic calls.
U. S. S. R. (Former)	7	640	Russian Federation
Vanuatu	678	771	
Vatican	379	504	
Venezuela	58	31	
Viet Nam	84	805	Subscriber number beginning with 561XXX can be made using manual calls
Wallis & Futuna Is.	681	707	
Western Samoa	685	779	
Yemen	969	806	Formerly Yemen (P. D. Rep. of)
(Rep. of)	967	895	Formerly Yemen (Arab Rep.)
Yugoslavia (Former)	381	62	
Zaire	243	982	Telex calls to places other than Kinshasa Subscriber beginning with 2XXXX can be made as Semi-automatic calls.
Zambia	260	902	
Zanzibar	259	990	
Zimbabwe	263	907	

Ocean Area	Telephone Ocean Region Access Code	Telex Ocean Region Access	Remarks
AOR – W	874	584	Atlantic Ocean-W
AOR – E	871	581	Atlantic Ocean-E
POR	872	582	Pacific Ocean
IOR	873	583	Indian Ocean

Chapter 7 RC-1500-1T Control Panel and PP-510

7.1 RC-1500-1T Control Panel

The figure which follows is an exploded view of the control panel.



Function of Switches and Lamps

① EMG LIGHT switch

Turns on and off the emergency lamp (20W tungsten lamp) atop the radio console. If an external emergency light switch is provided, the emergency lamp can also be switched on and off by that remote switch. (Flipping the switch to the other side changes the state of the lamp; on or off. Upward position is not always on.) The emergency lamp can be used even when the AC power is alive.

② BATTERY MONITOR Lamp

IN USE lamp (AC power failure) [Orange]

Lights to alert that the AC power has failed and radio equipment are operating from the radio battery (DC) alone. When this lamp lights, only the equipment related to distress communications are powered. (MF/HF DSC watch receiver, printers and the desk lamp are off.)

LOW VOLT lamp [Red]

Lights to alert that the battery voltage is below 22.5VDC. (Audible alarm sounds until the voltage becomes 22.5VDC.)

③ BATTERY CHARGER switch

Turns on and off the battery charger. (The voltage meter is on the control panel.)

OFF: Disconnects the charger from the radio battery.
AUTO: Charges the battery.

In the event of AC power failure, the radio battery automatically supplies power to the radio equipment regardless of this switch setting.

Battery charging

Before operating the radio, check the battery voltage on the meter provided on the AC/DC Radio Switch Box. The battery voltage is maintained between 24 VDC and 27.5 VDC when the BATTERY CHARGER switch is in the AUTO position. Note that the OFF position of the BATTERY CHARGER switch may allow the voltage to drop below 24 VDC. In this case, charge the battery as follows:

1. Set the BATTERY CHARGER switch for MANUAL. Watch the charging current at the AC/DC Radio Switch Box. (For a 200AH battery, the charging current will be around 20A at the start, and will be reduced gradually as charging proceeds.) ⇢ For maintenance free battery, set the BATTERY CHARGER switch for AUTO.
2. Turn the BATTERY CHARGER switch off or set it to AUTO when the charging current falls below 2A.

Note: If the AC power has failed, the radio battery automatically supplies power to the radio equipment regardless of BATTERY CHARGER switch position. The battery will not discharge as long as the AC power is alive.

Care of the lead-acid battery

The lead-acid battery powers distress-related communications equipment when the ship's main power and emergency power fail, to enable communications in the event of distress. Therefore, follow the points mentioned below to keep the battery in good working order.

⚠ WARNING

Keep sparks and lit smoking materials away from the lead-acid battery. Make sure the battery room is well ventilated.

The battery emits hydrogen gas which can cause explosion.

The electrolyte in the lead-acid battery contains sulfuric acid which can be harmful, particularly to the eyes.

If sulfuric acid contacts eyes, skin or clothing, flush directly with water. For eyes, contact a physician. Loss of eyesight can result.

The temperature of the electrolyte in the lead-acid battery should not exceed 45°C.

The electrolyte can cause explosion if it becomes too hot.

1. Confirming charging

Confirm that the BATTERY CHARGER switch on the control panel is set for AUTO. Further, confirm that the battery voltage meter on the AC/DC Radio Switch Box reads between 24 V and 27.5 VDC.

2. Checking specific gravity of electrolyte

The specific gravity of electrolyte is normal if it is 1.240 ±0.010 (at 20°C).

3. Water supply

The electrolyte level can be seen on the battery. When the electrolyte falls below the highest graduation on the scale, fill to highest graduation with distilled water. Do not use diluted sulfuric acid or ordinary tap water—they will shorten battery life.

4. Cleaning

The battery and the area around it should always be clean and dry. Clean the battery case with a water-moistened cloth. Do not use chemical cleaners to clean the battery; they may crack the case. Kerosene may be used.

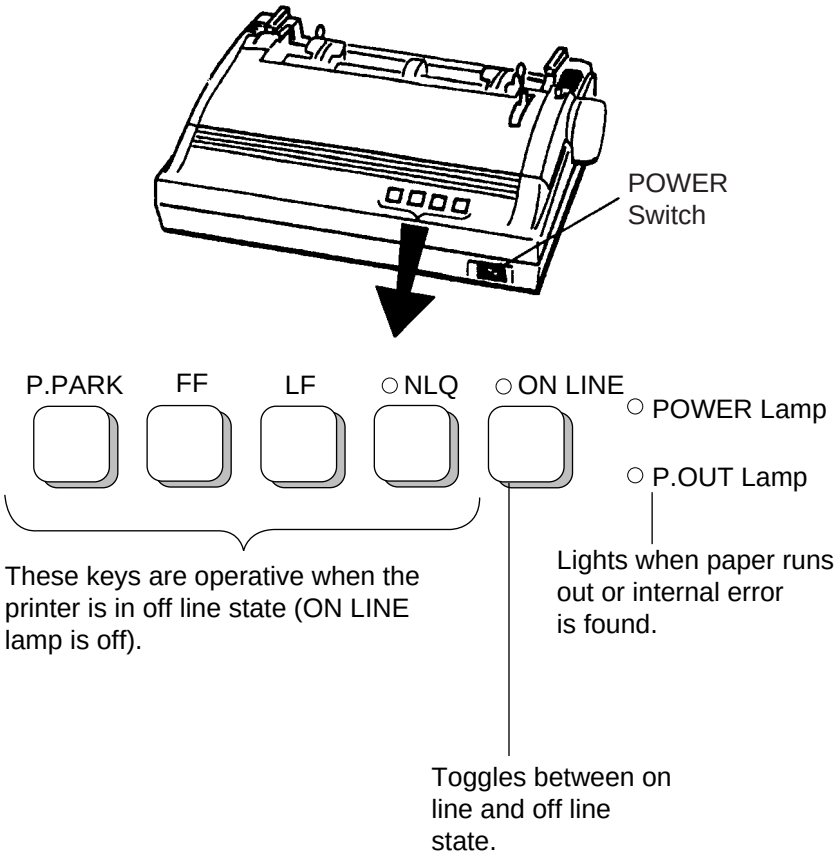
5. Environmental conditions

- Keep the battery out of direct sunlight.
- Coat the nuts and bolts which secure the battery contacts with anticorrosive paint for the lead-acid battery. Check yearly that bolts are securely fastened. Tighten nuts and bolts if necessary.

7.2 PP-510

Turning on the power

Turn on the POWER switch at the front of the printer. The POWER and ON LINE lamps light. The printer is now ready to print. If the ON LINE lamp is off, press the ON LINE switch to turn it on; you cannot print when the ON LINE lamp is off.



Key description

[NLQ] (Near Letter Quality) key

Toggles between draft and NLQ print modes. Lighting the key selects near letter quality (high quality) print.

[LF] key

Advances the paper one line. Press and hold down the key to advance the paper continuously.

[FF] key

Advances the paper to the top of the next available form. The default form length is 11 inches.

[P.PARK] key

Backs the paper by maximum 18 inches. If the paper is not detected after backing it, the P. OUT lamp blinks three times and the printer stays in off line state.

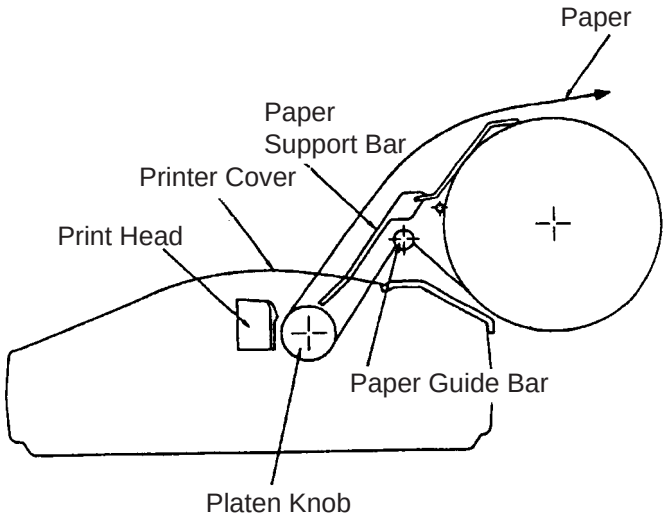
Loading roll paper

> **⚠ CAUTION**
>
> **Keep fingers away from edges on the printer and cover.**
>
> Edges can cut fingers.

This section shows you to load the roll paper.

Observe the following cautions when loading the paper:

- To prevent paper skewing or jamming, be sure the paper is positioned correctly.
- Never turn the platen knob too fast—gears may be damaged.

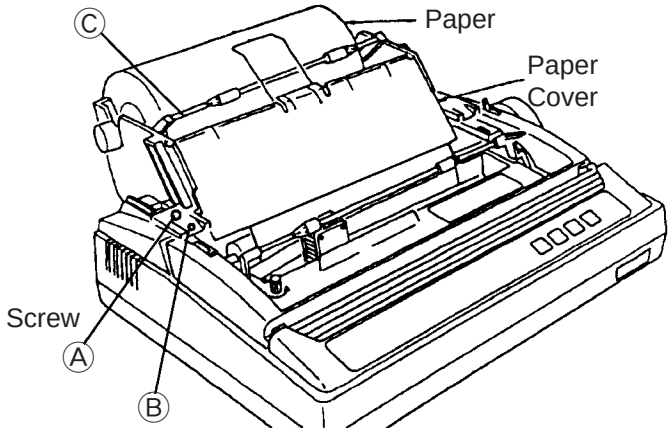


PP-510, side view

Removing remaining paper

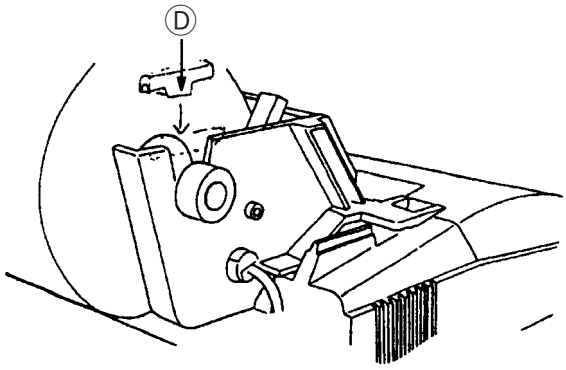
1. Press the P. PARK switch to back up the paper. Turn off the power.

2. Unfasten screws Ⓐ and push back Ⓑ (for both right and left) shown below to remove the printer cover.



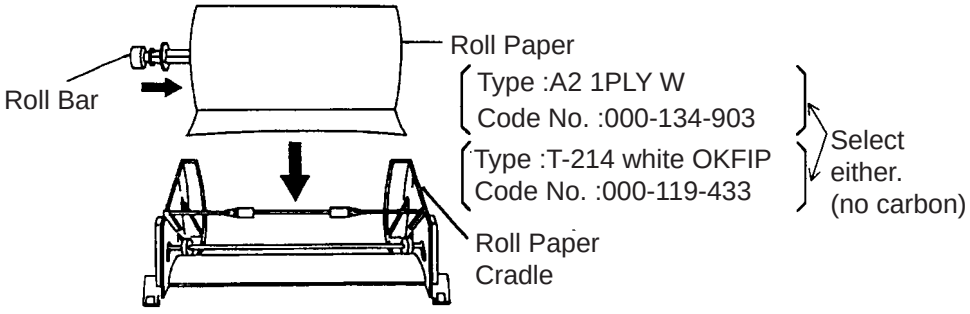
3. Swing out the paper cover by 100° to 120° then lift it up from the right-hand side to remove it from the printer.

4. Referring to the previous figure, lift the paper bail Ⓒ. As shown in the figure which follows, remove the roll paper stay Ⓓ and then take out the roll paper.

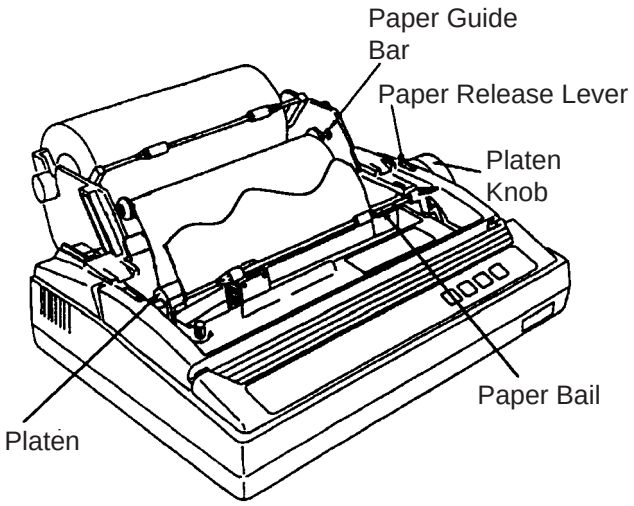


Loading new roll paper

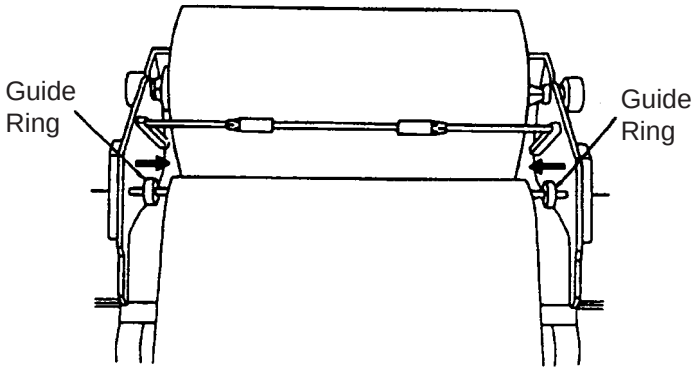
5. Insert the roll bar into the roll paper from the left side. Set the roll paper to the roll paper cradle.



6. Pull the paper bail toward the front. Manually feed the paper over the paper guide bar and under the platen. Turn the platen knob clockwise to feed the paper so it reaches the paper guide bar.



7. Unlock the paper release lever to adjust the paper and then lock the paper release lever.
8. Slide the left and right guide rings to position the paper straightly.



9. Replace the paper cover, the printer cover and roll paper stay.

Remarks on Replacement of Ribbon Cassette

Change the ribbon when print darkness is no longer suitable to your needs.

Part	Type	Code No.
Ribbon Cassette	SP-16051NB	000-133-029

The print head is hot after printing. Allow it cool down before touching it.

Chapter 8 MAINTENANCE

8.1 FS-1562-25 Antenna

⚠ DANGER

Never touch the SSB antenna, antenna coupler or lead-in insulator when the SSB radiotelephone is transmitting.

High voltage which can cause death is present at the above-mentioned locations when the SSB radiotelephone is transmitting.

Turn off the power before performing maintenance on the SSB antenna.

Maintenance for SSB antenna of FS-1562-25

Item	Check point
Wire antenna	• Check for slack in the wire. • Confirm that metallic structures are sufficiently separated from the wire antenna.
Whip antenna	• Check if bent or damaged.
Lead-in insulator	• Check for cracks and salt deposits. • Check that lead-in insulator is firmly connected. Also, check the lead-in insulator is firmly connected to the antenna wire. • Check metal parts for rust. • Check for rust, dirt, etc. which might deteriorate insulation.
Antenna coupler	• Check that antenna is firmly connected. • Check that the upper lid is tightly fastened. • Check that earth plate is tightly fastened. • Confirm that the anti-moisture tube is not kinked or clogged.

If any abnormality is found while underway, make appropriate temporary repairs. Have the equipment serviced by a FURUNO agent or dealer when making a port call.

If the equipment cannot be repaired onboard contact a FURUNO agent or dealer for advice.

8.2 RC-1500-1T

1. Cleaning display screens

Dust or dirt on the display screens of equipment may be removed with a soft cloth. Do not use chemical cleaners—they may remove paint and markings.

2. Cleaning floppy disk drives

The heads in the floppy disk drive of the DP-5 and FELCOM 11 should be cleaned regularly to prevent damage to floppy disks. Use a floppy disk cleaning kit. (FURUNO can supply a floppy disk cleaning kit. It is type MCD-2, code no. 000-116-420.)

Procedure

1. Insert a floppy disk cleaning kit in the drive.
2. Execute “Format” operation (in the F1 menu). The access lamp on the drive lights.
3. Wait until the access lamp goes off. Remove the disk. (Error message for formatting appears on the screen.)

8.3 Diagnosis Tests

1. SSB Radiotelephone

For FS-1562-25

Regulations require that the two-tone alarm, 2182 kHz voice, and 2182 kHz tuning be checked weekly.

Two-tone alarm test

1. Confirm that the equipment is powered.
2. Press the [ALARM] key.
3. Confirm that the two-tone alarm sounds for 45 seconds.
4. About 45 seconds later the alarm is automatically silenced. If suspension is necessary, press [ALARM] or [ENT].

2182 kHz voice testing with dummy antenna

1. While pressing and holding down the [ALARM] key press the [0] key. DUMMY appears on the display.
2. Making sure it is not silent times (00-03 min, 30-33 min), press the PTT switch on the handset and speak into the handset (hello test). Confirm that the ANT meter swings with voice.
3. About one minute later the dummy antenna is automatically disconnected. To do it manually, press [ALARM] or [0].

2182 kHz tuning test

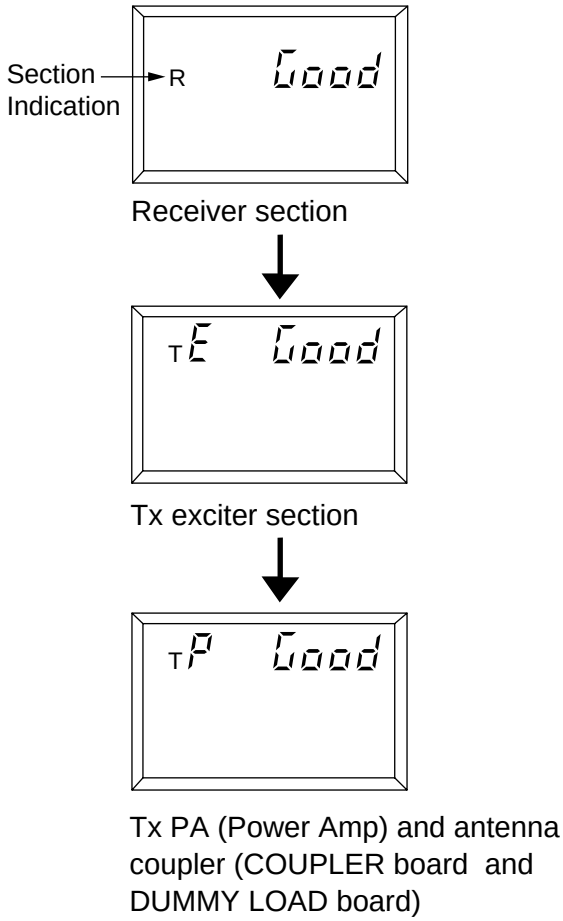
1. Press the [2182] key.
2. Press the [TX TUNE] key. Several seconds later the display should show OK. If error sound is heard, check the lead-in insulator is firmly connected to the antenna wire and check if the antenna is not bent or damaged.

The FS-1562-25 is equipped with the transceiver test and LCD/keyboard test. See the next pages.

Transceiver test (RF Gain should be set up for maximum.)

This test is checks the transceiver for proper operation. It should be conducted regularly to ensure proper operation. If a DSC or NBDP terminal is connected, the test should be conducted together with them. Before starting the test, set the RF GAIN control to maximum (fully clockwise).

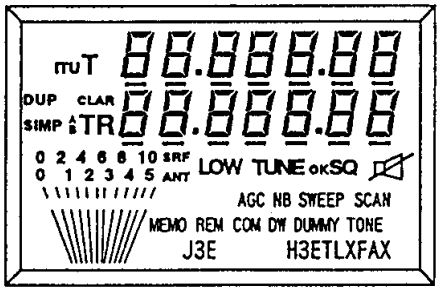
1. While pressing and holding down the TX TUNE key, turn on the power. All LCD segments appear.
2. Release the TX TUNE key. The FS-1562-25 starts diagnostics and the following indications appear.



If fault is detected, “no Good” appears instead of “Good” and appropriate section indication blinks after completion of the test.

LCD/keyboard test

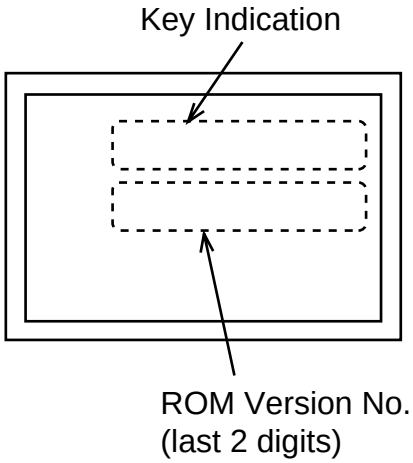
1. Turn on the power while pressing and holding down the [ENT] key. All display segments light. Release the [ENT] key.



2. Press each key one by one. A numeral or alphabet corresponding to the key pressed (see the table below) appears on the display. ROM version no. also appears.

Key	Indication
1	0
2	1
3	2
TX	3
4	4
5	5
6	6
RX	7

Key	Indication
7	8
8	9
9	A
RCL	b
2182	c
0	d
ALARM	E
ENT	F



For FS-5000

Control Unit & Transceiver Unit

To execute a diagnosis test, press the [RCL] key, enter a test number and hit the [ENT] key. The LCD displays an appropriate indication during testing, and, after completion of the test, the results, either OK or an error message. For error messages, see pages 8-7 and 8-8.

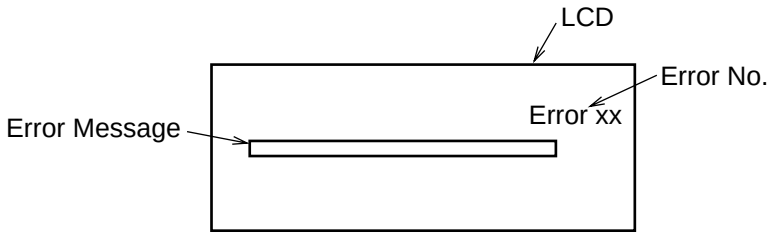
To escape from a diagnosis test at any time, press any key after the test is completed.

Diagnosis Tests

Test No.	Test	Indication During Testing
9900	All diagnosis tests except the key/LCD test	
TRANSCEIVER UNIT		
9910	Consecutive execution of tests 9911 to 9916	
9911	TX synthesizer on the EXC Board (PLL)	Checking Tx Local OSC
9912	MIC Input/Output on EXC Board Vc/Ic on PA Board SWR detection on TX FIL Board	Checking Tx board
9913	RX synthesizer on RX Board (PLL)	Checking Rx Local OSC
9914	RX Borad	Checking Rx board
9915	ROM (U10) on CPU Board	Checking TRx ROM
9916	RAM (U12) on CPU Board	Checking TRx RAM
CONTROL UNIT		
9920	Consecutive execution of tests 9921-9925	
9921	Key Check The name of each key appears on the LCD. Press each key one by one, and its corresponding indication will be highlighted if the key is functioning properly.	
9922	LCD Check Properly functioning LCD segments appear in highlight.	
9923	AF Board	Checking AF board
9924	ROM (U9) on the CPU Board	Checking Control ROM
9925	RAM (U15/U21) on the CPU Board	Checking Control RAM
Connection between Transceiver Unit and Antenna Coupler		
9930	Connection between Transceiver Unit and Antenna Coupler	Checking ATU

Error Messages for diagnosis tests

If one of the error messages shown below appears at diagnosis tests, check the corresponding boards.



Test No.	Error No.	Error Message	Check Point
9915/9916	1	CPU/Communication error	CPU board (in the transceiver unit) or Interconnection cable
9924/9925	1	CPU/Communication error	CPU board (in the control unit) or Interconnection cable
9923	2	No Tx AF signal on AF PCB	AF board
	3	No Rx AF sig. on AF PCB or TRx unit	AF board or RX board
	4	No SQ AF signal on AF PCB	AF board
	5	SQ not open on AF PCB	
	6	SQ not closed on AF PCB	
9913	7	Unlock freq.xxxx.xx kHz on RX PCB	RX board
9911	8	Unlock freq. xxxx.xx kHz on EXC PCB	EXC board
9914	9	No Rx signal through BPF on RX PCB	RX board
	10	No Rx signal though Pre-sel on RX PCB	
	11	No Rx signal on RX PCB	
	12	No S signal on RX PCB	
	13	Unable to control sensitivity on RX	
	14	Unable to mute Rx on RX PCB	

Continued

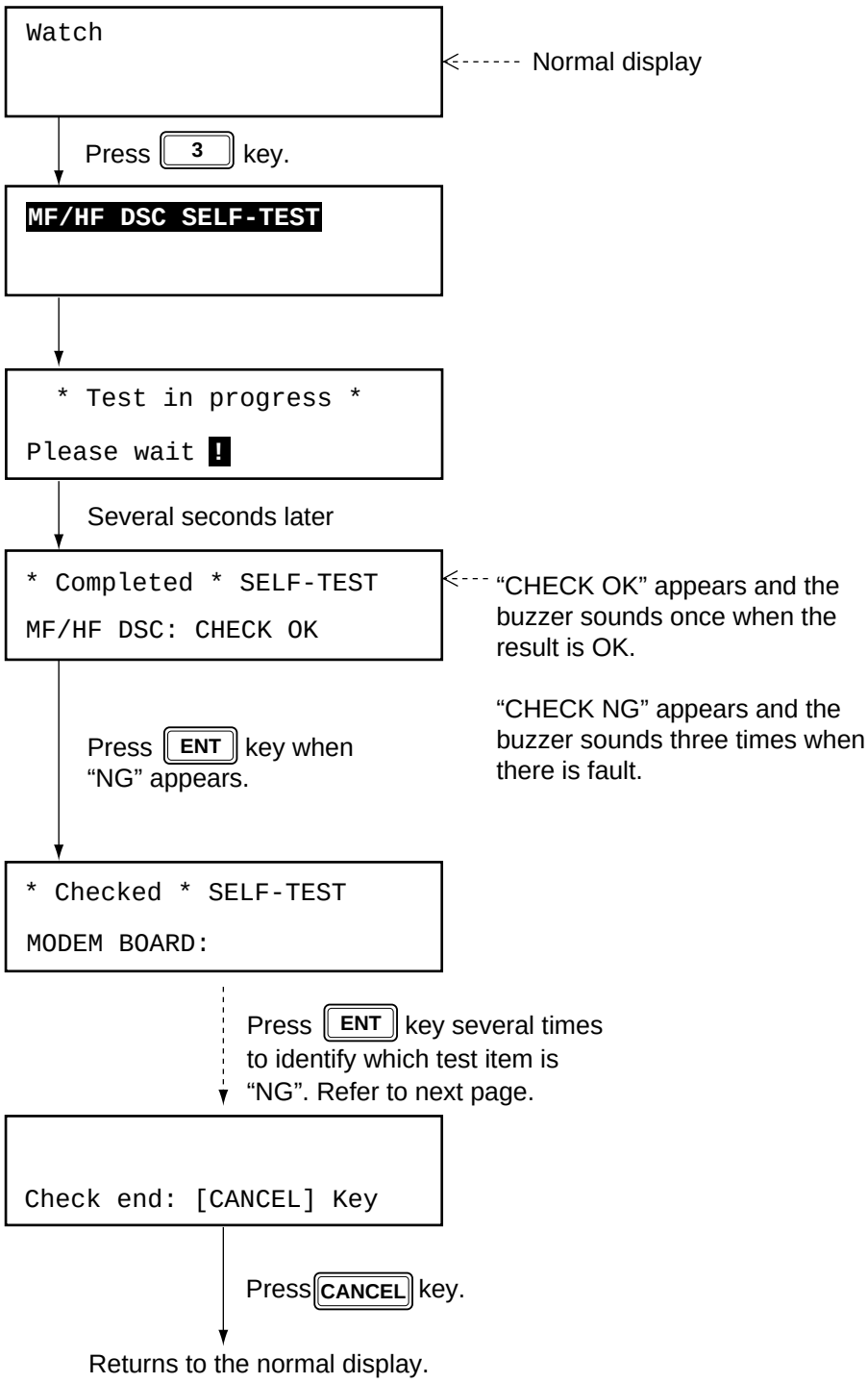
Test No.	Error No.	Error Message	Check Point
9912	15	No Mic signal from Control Unit on EXC	AF board, EXC board or Interconnection cable
	16	No Tx signal on EXC PCB	EXC board
	17	Unwanted Tx signal on EXC PCB	
	18	Insufficient source voltage	Low input voltage
	19	Insufficient PA Vc	REG Unit (+45V line voltage)
	20	Excessive PA idle current	PA board
	21	High temperature on PA	Temperature at PA board exceeds 90℃.
	26	Unwanted Tx signal on PA or TX FIL PCB	PA board or TX FIL board
	29	No Tx signal on PA or TX FIL PCB	PA board, TX FIL board or Interconnection cable
	33	No Tx signal on PA	PA board
	35	No Tx signal on TX FIL PCB	TX FIL board
9930	32	No acknowledge signal from Coupler	COUP board

If any abnormality is found while underway, make appropriate temporary repairs. Have the equipment serviced by a FURUNO agent or dealer when making a port call.

If the equipment cannot be repaired onboard contact a FURUNO agent or dealer for advice.

2. DSC-6

Regulations require that the equipment be checked daily.



Reason and remedy for NG in self test for DSC-6

Error message	Reason	Remedy
* Checked* SELF TEST MODEM BOARD:NG	Communication line between MODEM Board and CONTROL Board is faulty.	Replace MODEM Board (05P0370A) or CONTROL Board (05P0407C).
(with DMC-5 connected) AF LINE LOOP:NG REMOTE-A CALL: DMC-5	DSC's MODEM Board is faulty.	Replace MODEM Board.
AF LINE LOOP: OK REMOTE-A CALL:NG	• DMC-5 is off. • No communication between DSC and DMC. • Faulty CONTROL Board in DMC or DSC.	• Turn on DMC-5. • Check connection between DSC and DMC. • Replace CONTROL Board 05P0407C (DSC) or 05P0407A (DMC).
REMOTE-C LOOP:NG REMOTE-C CALL: NG	DSC's CONTROL Board is faulty. (As a result DP-5's remote control is inoperative.)	Replace CONTROL Board 05P0407C.
REMOTE-C LOOP: OK REMOTE-C CALL:NG	• DP-5 is off. • No communication between DSC and DP-5. • DP-5's CONTROL Board is faulty. (As a result DP-5's remote control is inoperative.)	• Turn on DP-5. • Check connection between DSC and DP-5. • Replace CONTROL Board 05P0386.
REMOTE-E LOOP:NG REMOTE-E CALL: NG	DSC's CONTROL Board is faulty.	Replace CONTROL Board 05P0407C.
REMOTE-E LOOP: OK REMOTE-E CALL:NG	• FURUNO SSB Radio-telephone is off. • Frequency on FURUNO SSB Radiotelephone set to 2182 kHz. • Timing accidentally coincides with that of dot pattern detection of AA-50. • No communication among DSC, AA-50 and FURUNO SSB Radiotelephone. • Control section of FURUNO SSB Radio-telephone is faulty.	• Turn on FURUNO SSB Radio-telephone. • Set frequency to other than 2182 kHz. • Turn off and on the AA-50 and execute DSC-6's diagnosis test again. • Check connections.

3. AA-50

Turn on the [POWER] switch.

↓

Scanning starts.

↓

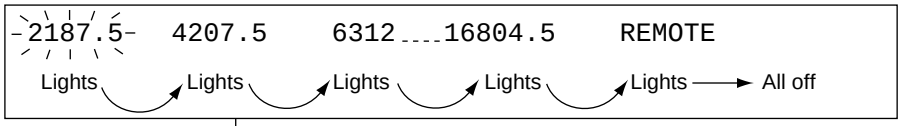
Press the [TEST] key.

↓

"TEST" LED lights.

↓

Check that the "frequency" LEDs light in order and turn off. If an LED blinks, see the table below.



↓

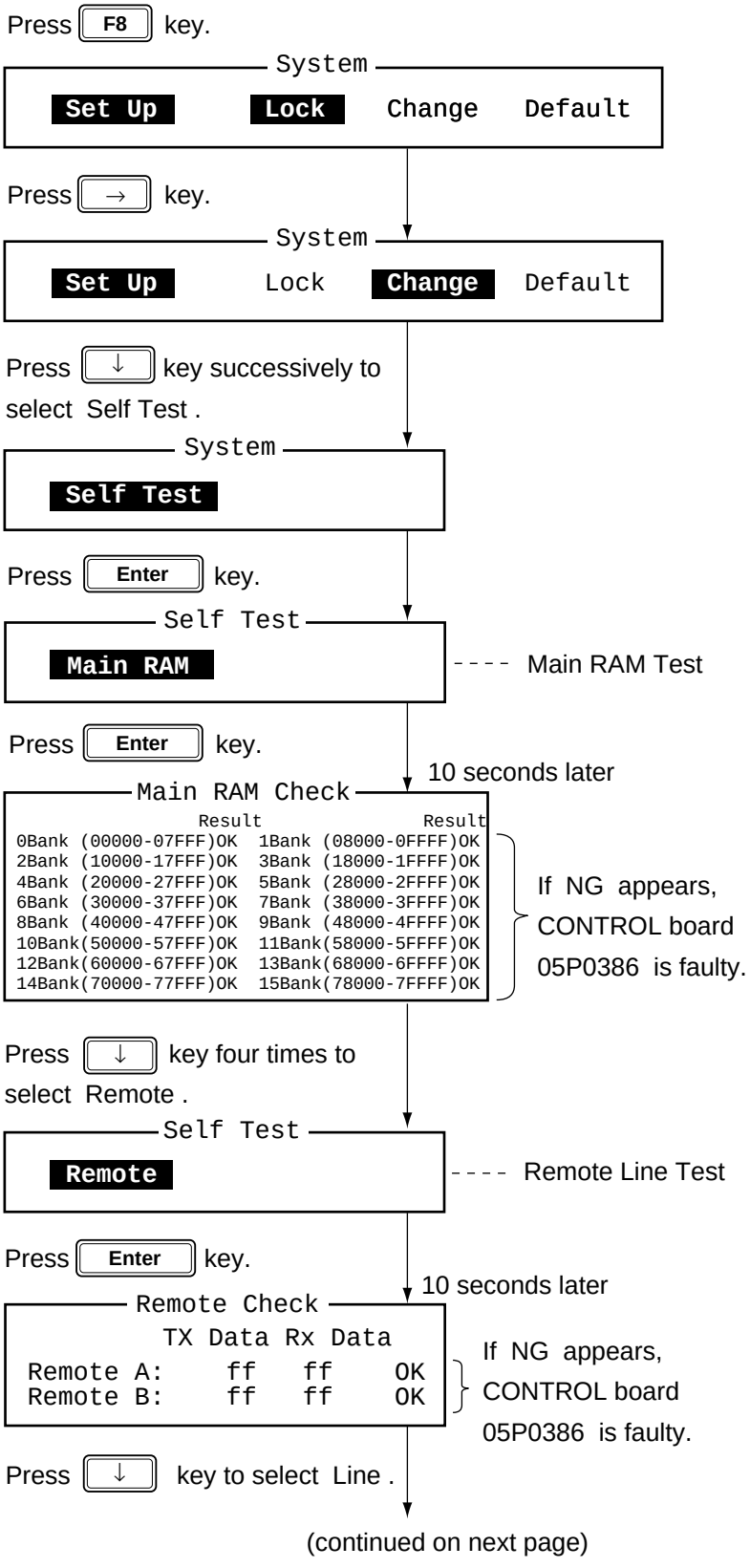
The test automatically stops, and scanning starts again.

Test error and remedy for AA-50

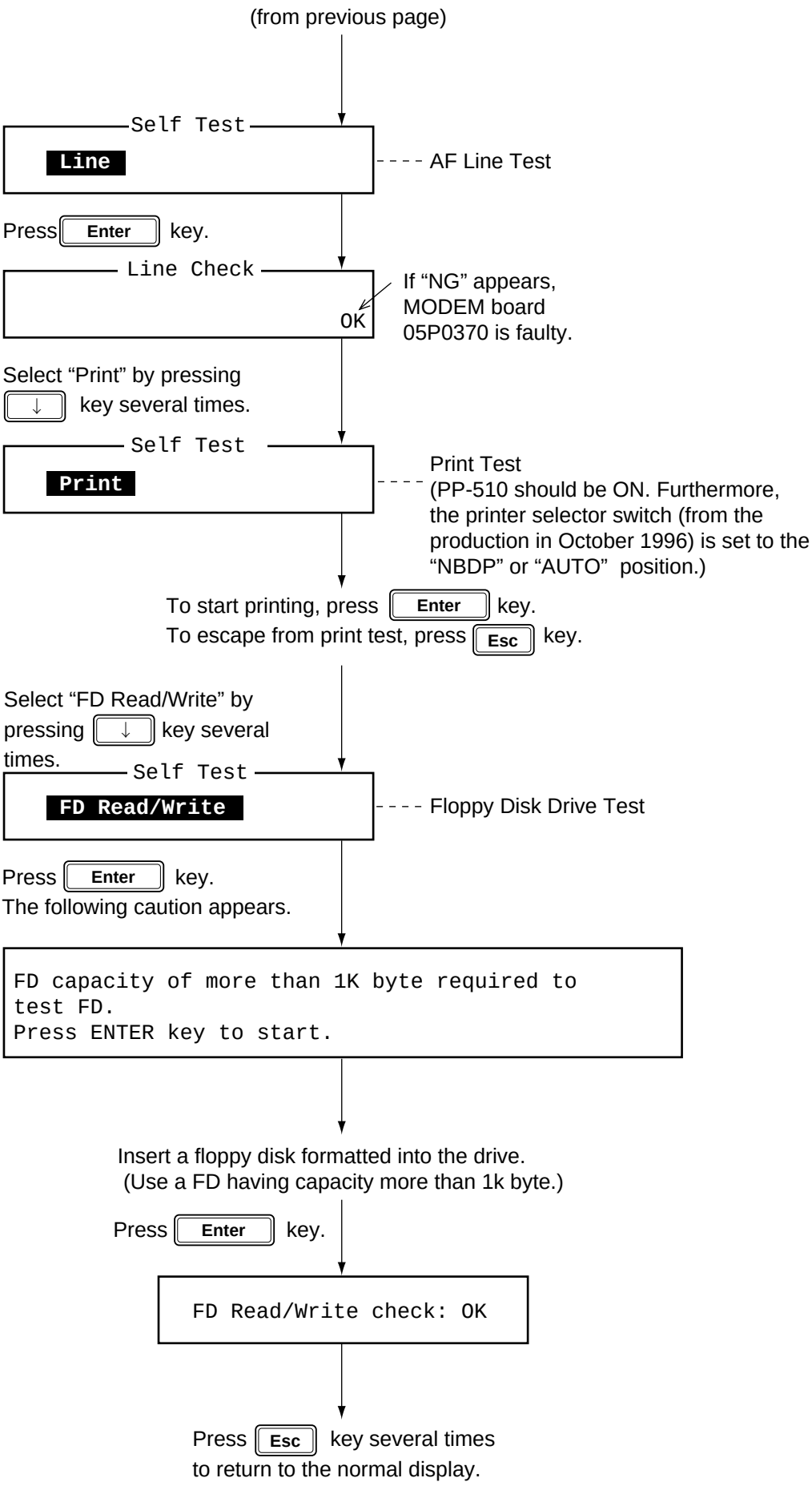
Symptom	**Reason**	**Remedy**
2187.5 blinks	2187.5 kHz Rx section is faulty.	Remember which frequency is blinking. Press any key to restart scanning. Offending frequency is scanned but cannot be received.
4207.5 blinks	4207.5 kHz Rx section is faulty.	
6312 blinks	6312 kHz Rx section is faulty.	
8414.5 blinks	8414.5 kHz Rx section is faulty.	
12577 blinks	12577 kHz Rx section is faulty.	
16804.5 blinks	16804.5 kHz Rx section is faulty.	
REMOTE blinks	• DSC-6 is off. • No communication between DSC-6 and AA-50.	• Turn on DSC-6 • Check connection between AA-50 and DSC-6.

4. NBDP

DP-5



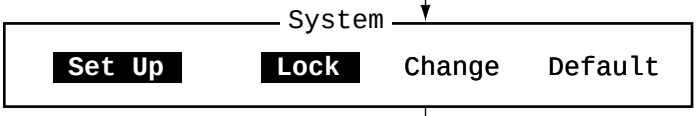
(continued on next page)


(from previous page)
Self Test
Line
AF Line Test
Press Enter key.
Line Check
OK
If "NG" appears, MODEM board 05P0370 is faulty.
Select "Print" by pressing ↓ key several times.
Self Test
Print
Print Test
(PP-510 should be ON. Furthermore, the printer selector switch (from the production in October 1996) is set to the "NBDP" or "AUTO" position.)
To start printing, press Enter key.
To escape from print test, press Esc key.
Select "FD Read/Write" by pressing ↓ key several times.
Self Test
FD Read/Write
Floppy Disk Drive Test
Press Enter key.
The following caution appears.
FD capacity of more than 1K byte required to test FD.
Press ENTER key to start.
Insert a floppy disk formatted into the drive.
(Use a FD having capacity more than 1k byte.)
Press Enter key.
FD Read/Write check: OK
Press Esc key several times to return to the normal display.

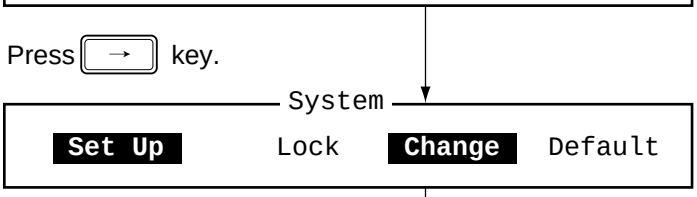
DP-6

Turn on the FS-2550, DSC-6 and printer PP-510.

Press [F6] key.

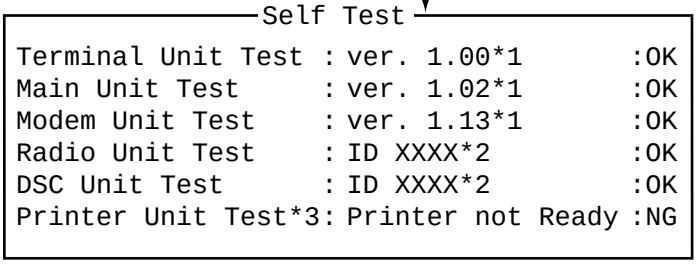


Press [→] key.



Press [↓] key successively to select “Self Test”.

Press [Enter] key.



*1 : Program version number
*2 : ID number for Connected equipments
*3 : If NG, printer is turned off.

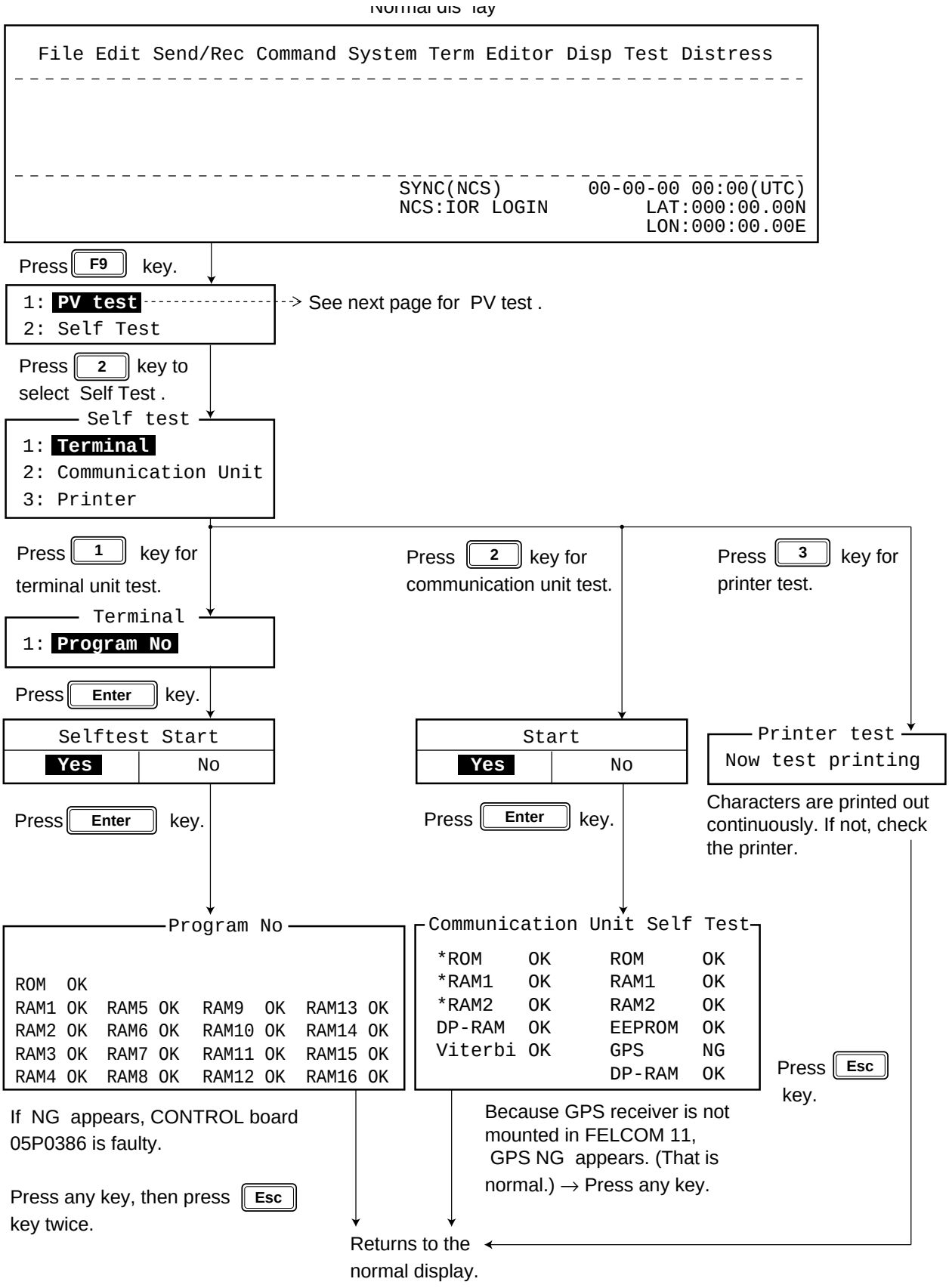
The that result should be “OK”. If not, contact your dealer for service.

Press the [Esc] key to return to the normal display.

5. Inmarsat C

FELCOM 11

This paragraph shows how to check the terminal unit, communication unit and printer of the FELCOM 11.



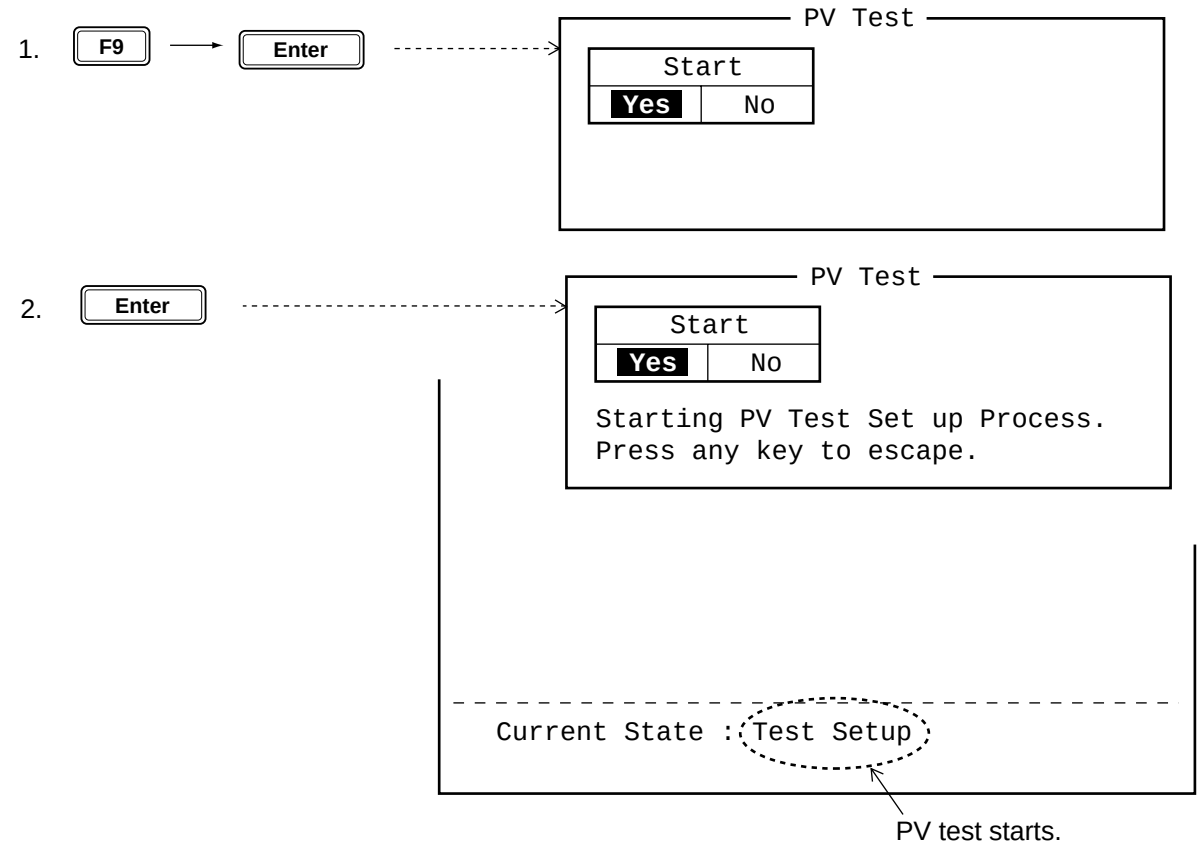
Performance verification (PV) test

This test checks the performance of an MES by transmitting signals between it and an LES (NCS) via a satellite.

Basic procedure

1. MES requests NCS to conduct PV test.
2. NCS acknowledges request for testing.
3. NCS selects appropriate LES.
4. Selected LES transmits test message to MES.
5. MES transmits test message to LES.
6. Two minutes later distress alert test is automatically conducted by the MES.
7. Test results appear followed by automatic termination of the test.

Detailed procedure



3. Press any key to return to the normal display. No further operation is required.

The display changes in the following sequence:

- When receiving reply from NCS:
- When testing begins:

```
Current State : Idle(pending!)
```

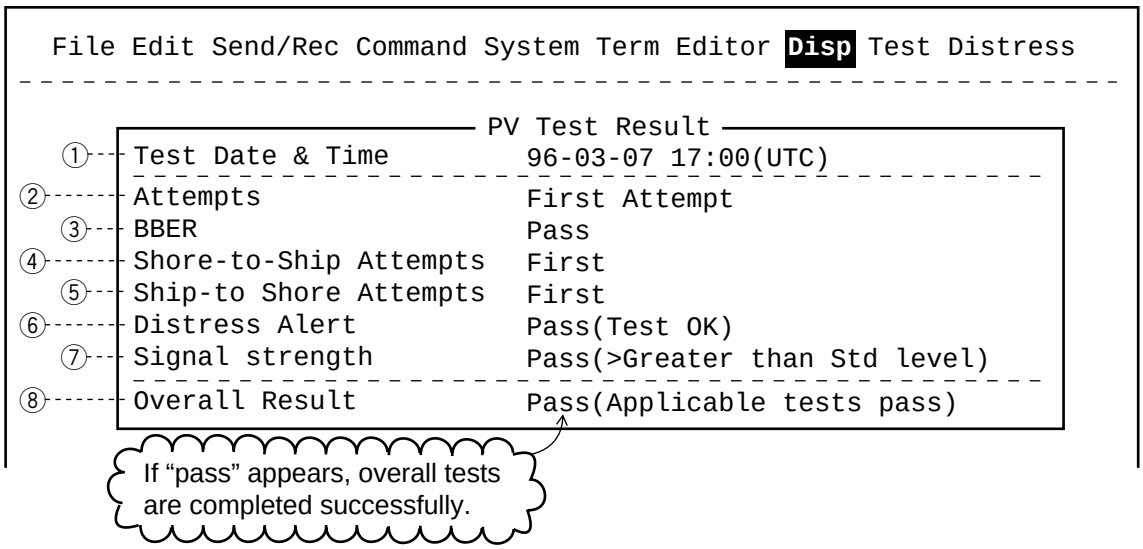
```
Current State : Testing
```

- LES transmits a message to MES, MES transmits a message to LES, MES conducts distress alert test. They are automatically carried out.

  Note: The distress alert test begins two minutes after traffic has been exchanged. The test begins automatically so no operation is required of the operator. Simply wait two minutes.
- When the test is completed “IDLE” replaces “Testing”.

<u>PV test results</u>

1. Press F8 3.



① Test Date & Time: Date and time of test

② Attempts: Number of times PV test was conducted

③ BBER: Bulletin Board Error Rate in percentage. Pass appears for no error

④ Shore-to-Ship Attempts: Number of tests initiated by LES

⑤ Ship-to-Shore Attempts: Number of tests initiated by MES

⑥ Distress Alert: "Pass (Test) OK" appears for successful testing.

⑦ Signal Strength: "Pass" appears when signal strength is greater than ratings.

⑧ Overall Result: "Pass" appears for satisfactory completion of test.

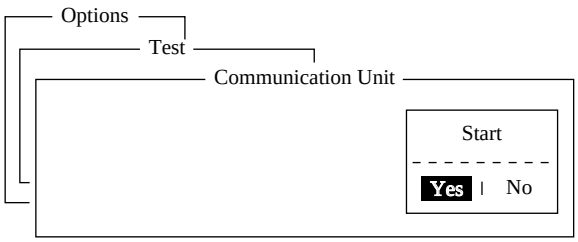
2. Press any key to return to the normal display.

FELCOM 12

Self test

This test can only be initiated from the main DTE. The communication unit must be idle.

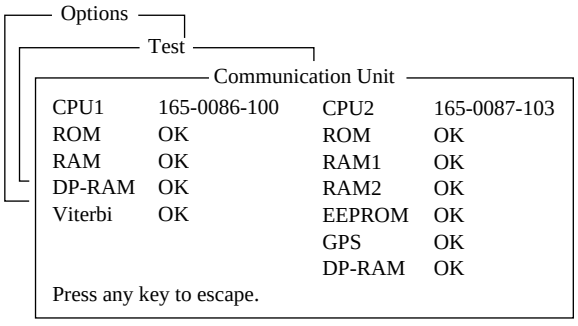
1. Press [F7] to display the Options menu.
2. Press [6] to display the Test menu.
3. Press [3]. The Communication Unit (self test) screen appears.



4. Press [Enter] to start the test.

   The message "Now Communication Unit-testing" appears in blinking reverse video during testing.

5. When the test is completed the screen shows the results of the test.

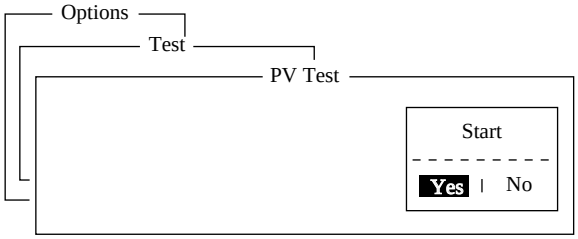


   Either "OK" or "NG" (No Good) appears next to each ROM and RAM tested. NG display releases the audible alarm. For defective ROM, RAM, DP-RAM, EEPROM or VITERBI replace the CPU Board. For GPS, NG appears when there is no GPS board or it is faulty.

6. Press any key to finish the communication unit test.

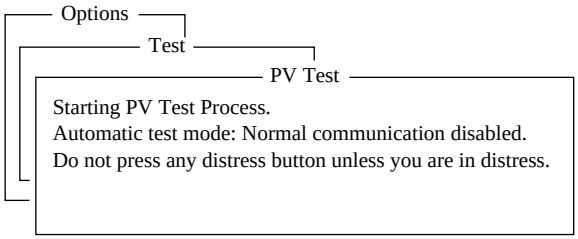
PV test

1. Confirm that the communication unit is in idle condition and logged in.
2. Press F7 to display the Options menu.
3. Press 6 to display the Test menu.
4. Press 1 to select PV Test.



Note: If the communication unit is not idle when the test is initiated the screen displays "MES is not idle now. Cannot start PV Test." And if not logged in, "Cannot start PV Test. (not Logged-in)" appears.

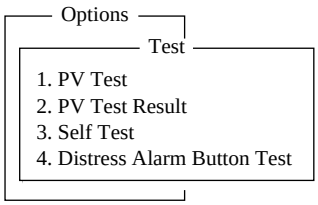
5. Press Enter to transmit the PV test request to NCS.



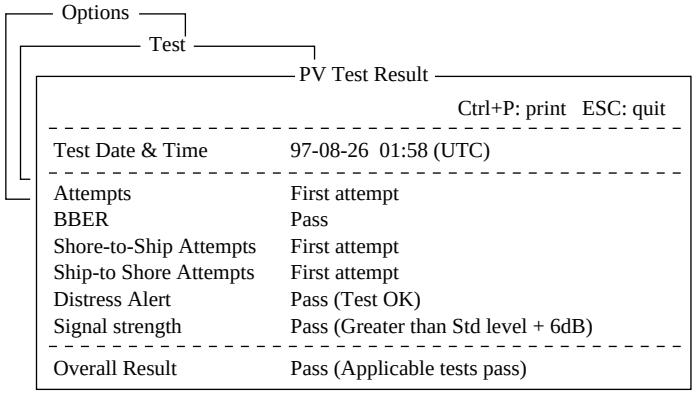
6. Press Esc to return to the standby display.
7. The screen displays "Current State: Idle (pending!)" when the acknowledge signal is received from the NCS.
8. When testing begins the screen displays "Current State: TESTING".
9. Transmit a message to the LES. The LES, after acknowledging receipt of your message, transmits a message to you.
10. Though a prompt asks you to test distress alert, do not press any key. The alert test is automatically conducted two minutes later.
11. When testing is completed the indication TESTING is replaced by IDLE.
12. The test results appear on the PV Test Result screen. (The next section shows how to interpret the results.)

Results of PV test

1. At the standby display, press F7 to display the Options menu.
2. Press 6 to display the Test menu.



3. Press 2 to display the results of the PV test.



Note: If the communication unit is off or malfunctioning, "DCE error: No response from DCE!!" appears. Check the connection between the communication unit and the terminal unit.

4. To escape, press any key. The standby display appears.

Interpreting the PV tests results display

Test Date & Time: Date and time of test

Attempts: Number of times the PV test was conducted.

BBER: Bulletin Board Error Rate (%). Pass appears for no error.

Shore-to-Ship Attempts: Number of tests initiated by LES.

Ship-to-Shore Attempts: Number of tests initiated by MES.

Distress Alert: "Pass (Test OK)" appears for successful testing.

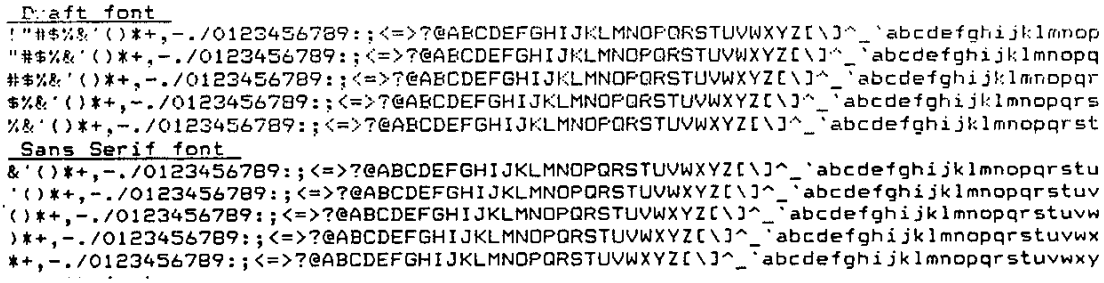
Signal Strength: "Pass" appears if signal strength is greater than standard level.

Overall Result: "Pass" appears for satisfactory completion of test.

6. PP-510

First, make sure the ribbon cassette and roll paper are properly set. Press and hold down the LF key while turning on the power. Hold down the LF key until the diagnosis test is started.

Test results



Turn off the power to escape from the test.

SPECIFICATIONS

The type of the component differ from set to set.

1. Radio Console Equipment

Inmarsat C MES	FELCOM 11 or FELCOM 12
SSB Radiotelephone	FS-1562-25 or FS-5000
NBDP Terminal	DP-5 or DP-6
DSC Terminal	DSC-6
MF/HF DSC Receiver	AA-50
Printer	Two sets of PP-510 (One is dedicated to the Inmarsat C. The other is shared by the DSC-6 and NBDP)
Printer Selector Switch	Switching (manual or automatic) between DSC-6 and DP-5

2. Power Supply

Main Source	100 VAC, 1ø, 50/60 Hz
Reverse Source	24 VDC
Battery Charger Source	100 VAC, 1ø, 50/60 Hz

3. Environmental Conditions

Useable Temperature	-15°C to +55°C
Relative Humidity	95% @ +40°C

FS-1562-25

GENERAL

Communication System	Simplex or semi-duplex
Frequency Range	1.6 to 27.5 MHz (transmit), 0.1 to 30 MHz (receive)
Frequency Resolution	Transmit: 100 Hz Receive: 10 Hz
Class of Emission	J3E SSB, suppressed carrier, signal channel containing analogue information
	H3E SSB, full carrier, signal channel containing analogue information, telephony; when 2182 kHz is first selected, H3E is set.
	J2B for DSC, NBDP; SSB, suppressed carrier, signal channel containing quantized or digital information with the use of a modulating sub-carrier, telegraphy for automatic reception
	F3C weather facsimile, reception only
Frequency Error	±10 Hz (Both Transmitter and Receiver)
Number of Channels	Custom channels: 200 max programmed by Furuno authorized service representatives ITU SSB/TELEX Channels as listed in Appendix
	2182 kHz (signal action)
	2187.5 kHz (automatically selected on DSC equipment)
Environmental	IEC 945: -15℃ to + 55℃ Transceiver unit, -25℃ to +70℃ ACU; 93% at 40℃
Power Supply	24 VDC +30%, -10%. For AC, a rectifier unit required.
	Receive: 2A
	Transmit (max.): FS-1562-25...40 A
Radiotelephone Alarm Signal Generator	Two tones of 2200 Hz and 1300 Hz transmitted alternately.

TRANSMITTER

Output Impedance	50 ohms
Output Power	J3E/H3E: FS-1562-25...250 W pep
	J2B: FS-1562-25...250 W pep
	(FEC mode: reduced to 60 W)
	Tune: 10 to 20 W approx.
Power Reduction	60 W
Controls	Output HI/LOW, test/send of two-tone alarm generator

ANTENNA COUPLER

Power Capability	AT-1560-25...250 W pep
Tuning System	CPU controlled fully automatic tuning system

Frequency Range	1.6 to 27.5 MHz
Input Impedance	50 ohms (viewed from transceiver)
Antenna Required	7 to 30 meters wire or whip
Tuning Power	10 to 20 W pep
VSWR	Less than 1.5
Tuning Time	Within 2 to 15 seconds, Within 0.5 seconds for an ever tuned frequency
Dummy Load	10 ohms + 250 pF for check of Two-tone alarm generator at 2191 kHz
Power Requirement	15 VDC, 1A (supplied from transceiver)
Construction	Waterproof plastic cabinet, stainless steel mount

RECEIVER

Receiving System	Double-conversion superheterodyne			
	IF: 54.455 MHz and 455 kHz.			
Sensitivity	Input level to produce SINAD 20 dB, or BER 10^{-2}			
		J3E	J2B	
	1.6-4 MHz	Below +16 dBμV	Below +6 dBμV	across 10 Ω + 250 pF
	4-27.5 MHz	Below +3 dBμV	Below -7 dBμV	across 50 Ω
Pass Band	350-2700 Hz -6 dB			
Cross Modulation	Unwanted signal +90 dBμV ± 20 kHz from +60 dBμV wanted signal			
Audio Output	2 W (8Ω internal loudspeaker), 5W (4Ω optional external loud-speaker)			
	0 dBm/600Ω line output (for NBDP, DSC)			
Other Features	RF Gain:	Adjustable		
	Squelch:	ON/OFF, Activated by voice/signal strength		
	Dimmer:	OFF/Low/Medium/High		
	Loudspeaker:	ON/OFF (Handset always alive)		
	AGC:	ON/OFF		
	Noise blanker:	always ON		

POWER AMP UNIT (Type PA-2500 for FS-1562-25)

Power capability	Input Power: 60 Wpep, Output Power: 250 Wpep
Input/Output Impedance	50 ohms
Power Supply	24 VDC, 30 A

DIMENSIONS

Transceiver Unit	108mm (W) x 258mm (H) x 300mm (D), 6.5 kg
Antenna Coupler Unit	297mm (W) x 390mm (H) x 90mm(D), 3.1 kg approx.

FS-5000

GENERAL

Communication System	Full duplex, semi-duplex or simplex (duplex operation requires receiving antenna)
Class of Emission	J3E, (USB, LSB), H3E, R3E, A1A, F1B (J2B), J3C
Frequency Range	1.6 MHz to 30 MHz
Number of Channels	Preset (User): 400 TX/RX pairs All ITU channels incorporated (Incl. DSC channels)
Frequency Accuracy	± 10Hz (-20℃ to +50℃)
Ambient Temperature Range	-20℃ to 55℃
Power Supply	24/32 VDC + 30%, -10% Consumption at 24 VDC Receive ----------3A Transmit (SSB) ----- Peak 60A 100/110/120/200/220/240 VAC, 1ø, 50/60 HZ, 2.4 kVA Max.
Coating Color	Control Unit front panel: Munsell N-3.0 Transceiver Unit: 2.5GY5/1.5 Antenna Coupler: White

TRANSMITTER

Frequency Range	1.6065 MHz to 29.9999 MHz (100 Hz steps)
RF Output Power	400 W pep + 0/-1.4 dB (1.6 - 25.5 MHz) at 50 ohm load (@ 24 VDC, IEC rec.)
Modulation AF Response	350 Hz to 2700 Hz
Keying Speed	CW: 25 bauds TELEX: 100 bauds
AF Input	-46 dBm/600 ohms
Tone Frequency	1500 Hz
Accessories	Two-tone alarm generator

RECEIVER

Receiving System	Double conversion superheterodyne IF: 45455 kHz and 455 kHz
Frequency Range	10 kHz to 29.9999 MHz (10 Hz steps)
Sensitivity	Input level at 50 obms to produce SINAD 20 dB

Frequency Range	SSB	AM
100 kHz to 300 kHz	25 dBuV	39 dBuV
300 kHz to 1.6 MHz	15 dBuV	29 dBuV
1.6 MHz to 30 MHz	3 dBuV	17 dBuV

Intermodulation	90 dBµV (CEPT method test)
Cross Modulation	94 dBµV (CEPT method test)
Selectivity	J3E/R3E: 350 to 2700 Hz H3E: ±3 kHz A1A/F1B: ±150 Hz
AF Output Power	Internal speaker: 2 W/8 ohms External speaker: 4 W/4 ohms Handset: 10m W/200 ohms
Standard Features	Scan, Sweep, Noise Blanker, Voice-activated Squelch, Preselector (for MF)

ANTENNA COUPLER

Tuning System	CPU controlled manual tuning possible for 2182 kHz
Frequency Range	1.6 MHz to 30 MHz
Input Impedance	50 ohms
Required Antenna	7 to 18 meter wire and/or whip
Tuning Power	10 W
VSWR	1.5 max.
Tuning Speed	0.2 to 2 sec. typical. 15 sec. max.
SOLAS Dummy Load	Internal (10 ohms + 250 pF, 200W average), optional supply
Antenna BK Relay	Internal, optional supply
Ambient Temperature Range	-30℃ to + 70℃
Relative Humidity	95% @ 35℃

NBDP

DP-5

1. Communications

Communication Mode	ARQ, FEC, DIRC (FSK)
Communication Protocol	CCIR Rec.625, 476-3, 490, 491, 492
ID Code	5 digits and 9 digits
Line Code	4B/3Y fixed mark (International)
Modulation	AFSK
Tone Frequency (mark/space)	1615/1785 Hz (±0.5 Hz)
Tone Frequency Tracking Range	±80 Hz
Line Input/Output	-30 dBm to +10 dBm, 600 ohms balanced

2. Communication Features

- Timer transmission and receiving (maximum 10 stations)
- Scramble operation (maximum 5 different code sets)
- Frequency scanning (maximum 10 groups, 20 channels/group)
- Morse code conversion (transmit only)
- Storage for up to 100 user channels

3. Display

- 12” CRT display (white on black)
- 80 characters/line, 25 lines/screen
- Character construction 7 x 9 dots
- Selection shown in black on white

4. Ambient Temperature

-15 to 55 ˚C

5. Power Supply

10 to 40 VDC, 40W

DP-6

1. Communications

Communication Mode	ARQ, FEC
Communication Protocol	CCIR Rec.625, 476-3, 490, 491, 492
ID Code	5 digits and 9 digits
Line Code	4B/3Y fixed mark (International)
Modulation	AFSK
Tone Frequency (mark/space)	1615/1785 Hz (±0.5 Hz)
Tone Frequency Tracking Range	±80 Hz
Line Input/Output	-30 dBm to +10 dBm, 600 ohms balanced

2. Communication Features

- Timer transmission and receiving (maximum 10 stations)
- Frequency scanning (maximum 10 groups, 20 channels/group)
- Storage for up to 100 user channels

3. Display

- 9.5” LCD display (white on black)
- 72 characters/line, 25 lines/screen
- Character construction 7 x 9 dots
- Selection shown in black on white

4. Power Supply

Main unit : 18.0 to 36.0 VDC
Terminal Unit : 24 VDC, 18 W

5. Ambient Temperature

-15 to 55 ˚C

FELCOM 11

Transmitting Frequency	1626.5 to 1646.5 MHz
Receiving Frequency	1530.0 to 1545.0 MHz
Antenna	Omnidirectional
G/T	Better than -23 dB/K (elevation angle 5˚)
EIRP	12 to 16 dBW (elevation angle 5˚)
Modulation	BPSK
Modulation Rate	1200 sps
Coding	Convolutional coding with coding rate 1/2 and constraint length 7
Decoding	Viterbi decoder
Transmission Speed	600 bps
Operating Environment	Above deck equipment temperature: -35 ˚C to + 55 ˚C relative humidity: 95% (at 40 ˚C) Blow deck equipment temperature: 0 ˚C to + 45 ˚C relative humidity: 95% (at 40 ˚C)
Power Supply	24 VDC
Power Consumption	IC-111 & IC-211: Receiving 30W Transmitting 200W IC-511: 41 W PP-510: 80 W MAX

FELCOM 12

Transmitting Frequency	1626.5 to 1646.5 MHz
Receiving Frequency	1530.0 to 1545.0 MHz
Antenna	Omnidirectional
G/T	Better than -23 dB/K (elevation angle 5˚)
EIRP	12 to 16 dBW (elevation angle 5˚)
Modulation	BPSK
Modulation Rate	1200 sps
Coding	Convolutional coding with coding rate 1/2 and constraint length 7
Decoding	Viterbi decoder
Transmission Speed	600 bps
Internal GPS Receiver (option)	Eight discrete channels, all-in-view Approx. 50 m, 95% of the time, Horizontal dilution of position (HDOP)≤4 All GPS receivers are subject to degradation of position and velocity accuracies under the U.S. Department of Defense.
Navigation Equipment Interface	Internal GPS Board (option): NMEA0183

Operating Environment	Above deck equipment Temperature: -35˚C to +55˚C Relative humidity: 95% (at 40˚C) Below deck equipment Temperature: -15˚C to +55˚C Relative humidity: 95% (at 40˚C)
Ship's Mains	Communication unit, Terminal unit and Printer: 24VDC [100/110/120/200/220/240 VAC by optional AC-DC Power Supply Unit PR-300]
Power Consumption	IC-112 & IC-212: Receiving 30 W, Transmitting 180 W IB-581: 18W PP-510: 36 W MAX
Color	Antenna unit: N9.5 Antenna unit base: 2.5PB3.5/10 Communication unit: N3.0 Terminal unit: Cover: 2.5GY5/1.5 Panel: N3.0 Distress alert unit: 2.5GY5/1.5 Received call unit: 2.5GY5/1.5
Waterproofing:	Antenna unit: IEC529 IPX6 Communication unit: IEC529 IPX2 Terminal unit: IEC529 IPX0