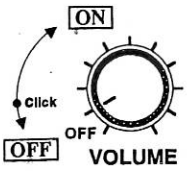
QUICK REFERENCE CARD

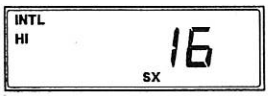
FURUNO

Model **FM-2610**

POWER ON/OFF

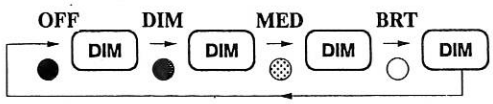


Last accessed channel



ADJUSTING DIMMER

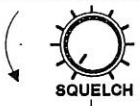
Press [DIM] key to select optimum back-light brightness.



- [DIM] key inoperative during TX or SCAN.

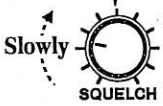
ADJUSTING VOLUME & SQUELCH

SET (Press.) → DIM (Press.) — Enable speaker if (SPKR mute) symbol is present.



Turn SQUELCH control fully counterclockwise.

Adjust VOLUME control for optimum sound level.



Turn SQUELCH control slowly clockwise until noise just disappears.

SELECTING A CHANNEL

CHANNEL 16	CH16 (Press.)
ORDINARY CHANNEL INTL USA	CHANNEL (Press.)
WEATHER CHANNEL WX	WX (Press.)
MEMORY CHANNEL MEMO	MEMORY (Press.)
SELECT CHANNEL M	SEL SCN (Press.)
PRIORITY CHANNEL P	PRIRTY (Press.)

CHANNEL SELECT

SCANNING (Adjust SQUELCH precisely.)

SCAN START

ALL SCAN

CHANNEL (Hold 1 sec.)

WEATHER SCAN

WX (Hold 1 sec.)

MEMORY SCAN

MEMORY (Hold 1 sec.)

SELECT SCAN

SEL SCN (Hold 1 sec.)

SCAN FEATURES

- Scans each channel in the group, while watching CH16.
- Locks on CH16 if signal is present on CH16.
- If signal is present on a scanning channel, FM-2610 starts dual-watching between the channel and CH16.
- Reverts to scanning if signal is gone.

SCAN STOP

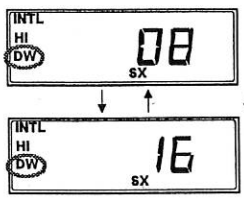
- CH16 (Press.) → Channel 16
- CHANNEL (Press.) → Last accessed ordinary channel
- WX (Press.) → Last accessed weather channel
- MEMORY (Press.) → Last accessed memory channel
- SEL SCN (Press.) → Select channel with minimum channel number
- PRIRTY (Press.) → Priority channel
- PTT → Current channel within the scan group

DUAL-WATCHING (Adjust SQUELCH precisely.)

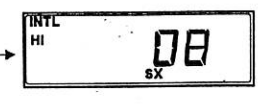
Dual-watches between a channel and CH16. Locks on CH16 if signal is present on CH16.

Select any desired channel other than CH16 and PRIORITY channel.

START: DW (Press.)



STOP: DW (Press.) or PTT

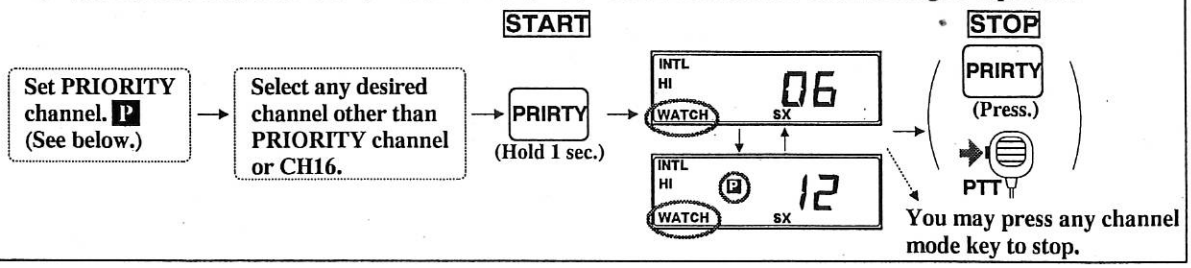


You may press any channel mode key to stop. (See SCAN STOP above.)

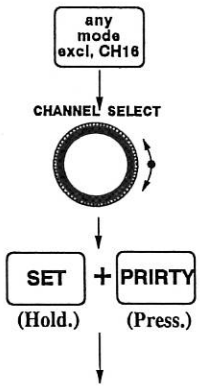
Pub.No. OS-E5527-0B

ON WATCH OPERATION (Adjust SQUELCH precisely.)

Dual-watches between a channel and PRIORITY channel. Locks on PRIORITY channel if signal is present.

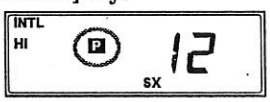


SETTING PRIORITY CHANNEL



Select any channel to be registered as PRIORITY channel. (except CH16)

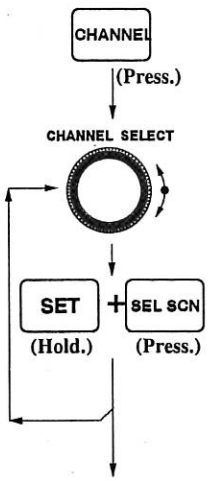
Holding [SET] key, press [PRIRITY] key.



P mark appears to show the channel is registered as PRIORITY channel.

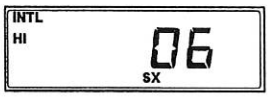
- Only one PRIORITY channel at a time. Setting new PRIORITY channel automatically cancels former one.

SETTING SELECT CHANNELS

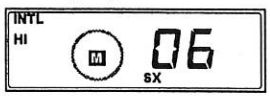


Press [CHANNEL] key to select ordinary channel mode.

On the dial, select a channel to be registered (unregistered) as a SELECT channel.



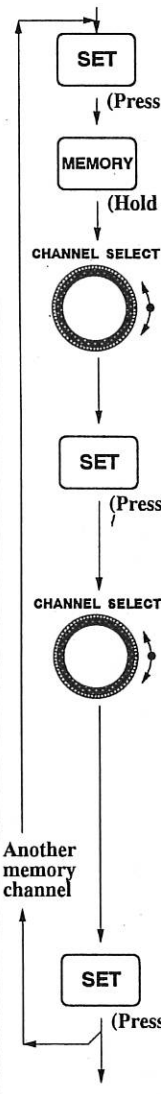
Holding [SET] key, press [SEL SCN] key.



M mark appears (disappears) to show the channel is registered (unregistered).

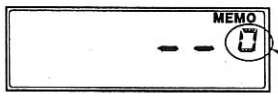
SETTING MEMORY CHANNELS

(20 memory channels max.)

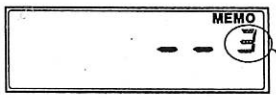


Example to store CH21 into MEMO 3

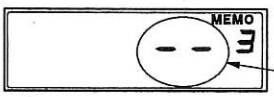
Press [SET]key, and immediately press and hold [MEMORY] key for more than one second.



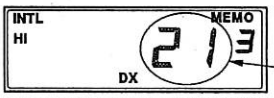
Select a memory number by the channel select dial. (0 to 19)



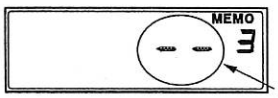
Press [SET] key to set the MEMO number.



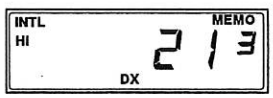
Select a channel to be stored into the MEMO.



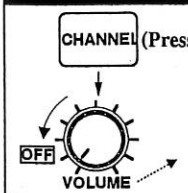
To clear channel in the MEMO, select "- -" symbol.



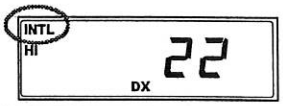
Press [SET] key to store the channel number.

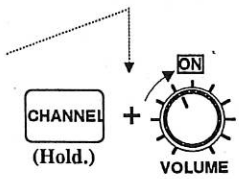


SWITCHING BETWEEN INTL & USA CHANNELS

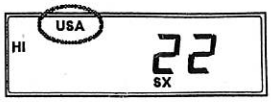


Press [CHANNEL] key, and then turn off the power.

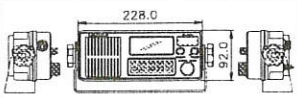
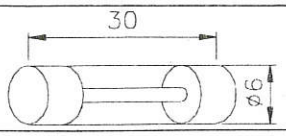
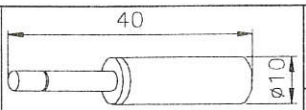
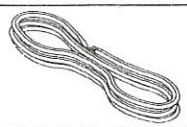
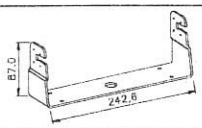
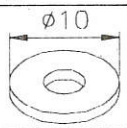
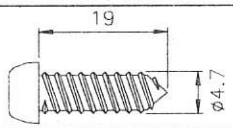
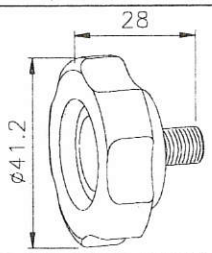
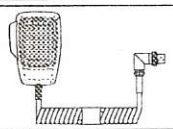
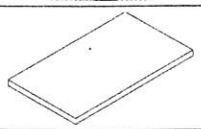
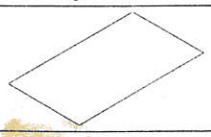




Holding the [CHANNEL] key, turn on the power.



PACKING LIST

NAME	OUTLINE	DESCRIPTION/CODE NO:	Q'TY
MAIN UNIT		FM-2610 000-054-518	1
SPARE PARTS			
FUSE		10A 000-125-394	2
INSTALLATION MATERIALS			
PLUG		000-125-367	1
CABLE ASSY		000-125-953	1
ACCESSORIES			
BRACKET		000-125-391	1
FLAT WASHER		000-125-954	4
MOUNTING SCREW		000-125-955	4
NYLON WASHER		000-125-393	2
CLAMPING KNOB		000-125-393	2
HAND-MICROPHONE		WITH MIC. HANGER 000-125-393	1
OPERATOR'S MANUAL		OM-E5527-OX 000-803-142	1
QUICK REFERENCE CARD		OS-E5527-OX 000-803-143	1

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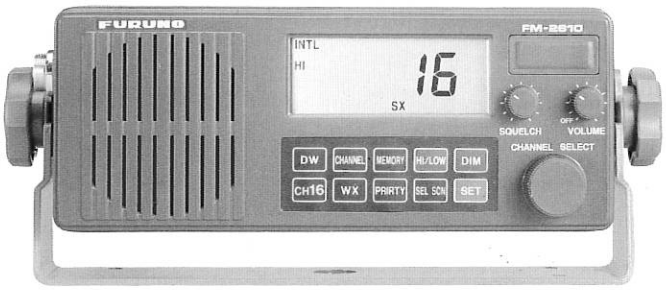
OPERATOR'S MANUAL

Model FM-2610

MARINE VHF RADIOTELEPHONE



Pub. No. OM-E55270-B

FURUNO

⚠ SAFETY INFORMATION

"DANGER",**"WARNING"** and **"CAUTION"** notices appear throughout this manual, It is the responsibility of the operator and installer of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.

⚠ **DANGER**	This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ **CAUTION**	This notice indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or property damage.

SAFETY INFORMATION FOR THE INSTALLER

⚠ CAUTION

Ground both the display unit and the antenna unit.

Ungrounded equipment can give off or receive interference or cause electrical shock.

Confirm that the power supply voltage is compatible with the voltage rating of the equipment.

Connection to the wrong power supply can cause fire or equipment damage. The voltage rating appears on the label at the rear of the display unit.

Do not install the equipment where flammable gas is stored.

Fire can result.

SAFETY INFORMATION FOR THE OPERATOR

⚠ WARNING

Do not open the cover of the equipment

This equipment uses high voltage electricity which can shock, burn, or cause death. Only qualified personnel should work inside the equipment.

Do not dissasemble or modily the equipment

Fire, electrical shock or serious injury can result.

Immediately turn off the power at the ship's mains switchboard if water or foreign object falls into the equipment of the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire, electrical shock or serious injury.

If water leaks into the equipment, immediately shut off the power at ship's mains.

Continued use may cause fire or short circuit.

Do not place containers filled with liquids on the top of the equipment.

Fire or short circuit may result.

If the equipment becomes hot, immediately shut off the power at ship's mains.

Continued use may cause fire or electrical shock. Contact your dealer.

Keep the equipment away from heat sources.

Heat can alter equipment shape, and melt the power cord, causing fire and electrical shock.

⚠ CAUTION

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

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

Do not place heater near the equipment.

Heat can melt the power cord, which can result in fire or electrical shock.

Do not operate the unit with wet hands.

Electrical shock can result.

Whenever you feel the equipment is abnormal, immediately shut of the power at the ship's mains.

If the unit becomes hot or emits noise, contact your dealer.

The useable ambient temperature range of the diplay unit is -20 ℃ to 55 ℃.

Use out of this range can damage the equipmment.

A word to FM-2610 owners

Congratulations on your choice of the Furuno FM-2610 Marine VHF Radiotelephone! We are confident that you will enjoy many years of trouble-free operation with this fine piece of equipment.

For over 40 years Furuno Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication is furthered by our extensive global network of agents and dealers.

Your equipment is designed and constructed to provide commercial grade performance and reliability, yet affordable for pleasure craft owners.

Please carefully read this manual and follow the recommended procedure for installation, operation and maintenance. With proper care, your equipment should provide years of enjoyable and dependable communications.

Thank you for considering and purchasing Furuno product.

Features

- 25 W RF output from a compact and solid cast aluminium cabinet: may be mounted in any small space.
- Spray-proof structure (IEC259 IPX3 grade of water protection).
- Improved interference rejection and minimum receiver distortion with the newest GaAs FET mixer.
- Pre-programmed with all international marine channels. Where permitted, USA channels, weather channels and private channels are also programmed.
- Single-key access to channel 16 and user-defined PRIORITY channel.
- Quick access to a wanted channel by grouping often-used channels. (MEMORY channels, SELECT channels)
- Where authorized, channel scanning within various channel groups is available. (ALL scan, WX scan, MEMORY scan, SELECT scan)
- Two kinds dual watch function --- conventional DUAL WATCH between channel 16 and a desired channel, and ON WATCH between user-defined PRIORITY channel and a desired channel.
- Backup for all the user settings and last accessed channels.
- Large high-contrast LCD display with a dimmerable backlight facility: easy to read for day and night.
- Advanced commercial grade design and components.

Contents

Specifications

GENERAL

Rules	FCC, CEPT, ITU and other national regulations
Communication System	Simplex or semi-duplex
Class of emission	Frequency modulation with a pre-emphasis of 6 dB/oct (phase modulation)
Channel program	International channels, US channels, Weather channels
Scanning	All scan, Weather scan, Memory scan, Select scan
Channel spacing	25 kHz
Frequency stability	+/-1.5 kHz (-20 °C to +55 °C)
Operating temperature range	-20 °C to +55 °C
Antenna impedance	50 ohms
Power supply	12 VDC +30%/-10%
Current drain	Stand-by 0.3A Receive 0.5A Transmit 5.5A
Dimensions and weight	268 (W) x 92 (H) x 104 (D) mm 1.43 kg 10.55" (W) x 3.62" (H) x 4.09" (D) 6.9 lb
Memory backup period	Approximately 3 years

RECEIVER

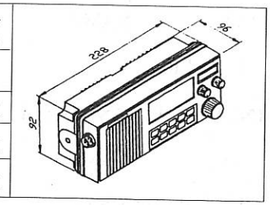
Frequency range	155.000 MHz to 163.425 MHz
Receiving system	Double superheterodyne
Intermediate frequency	1st 16.9 MHz 2nd 455 kHz
Sensitivity	Less than -5dBu (0.56 μV) for 20 dB SINAD with CCITT psophometric filter
Selectivity	70 dB
Spurious response rejection	-70 dB
Intermodulation	70 dB
Squelch sensitivity	Threshold -8 dBu (0.4 μV) Tight 1 dBu (1.1 μV)
Audio output	Internal 1.5W into 8-ohm speaker External 3W into 4-ohm speaker
Harmonic distortion	Less than 10%

TRANSMITTER

Frequency range	155.000 MHz to 158.825 MHz
RF Output power	25W (HI), 1W (LOW) switchable
	Automatic power reduction on some specific channels as required by regulations
Frequency deviation	+/-5kHz max.
Spurious emissions	Atten. more than 70 dB (FCC rule)
	Less than 2.5μW (CEPT rule)
Harmonic Emissions	70 dB below carrier level
Modulation AF response	Modulation index within +1dB or -3dB relative to its value at 1000Hz for modulation frequencies 300 to 3000 Hz
Audio Frequency Distortion	Less than 10% for +/-3kHz deviation (at 1000Hz)

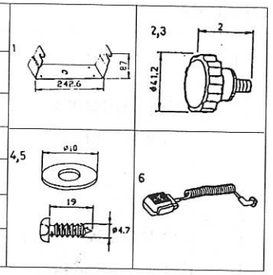
COMPLETE SET

NO	NAME	TYPE	CODE	QTY
1	Transceiver Unit	FM-2610	9910-9000-0157	1 pc
2	Accessories	See separate lists below		1 set
3	Spare Parts			1 set
4	Installation Materials			1 set

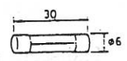


ACCESSORIES

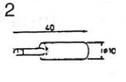
NO	NAME	TYPE	CODE	QTY
1	Bracket Assy	9950-9000-0116	000-125-391	1
2	Knob Screw	5005-9000-0001	000-125-392	2
3	Knob Washer	5701-9000-0013	000-125-393	2
4	Mounting Screw	5607-9000-0002	000-125-955	4
5	Flat Washer	5701-9000-0005	000-125-954	4
6	Microphone	9920-9000-0516	000-125-383	1



SPARE PARTS

NO	NAME	TYPE	CODE	QTY	
1	Fuse	10A	000-125-394	2	1 

INSTALLATION MATERIALS

NO	NAME	TYPE	CODE	QTY	
1	Power Cable	3191-9000-0028	000-125-953	1	1 
2	US Plug (ext. spkr)	MP-105N (3.5Ø)	000-125-387	1	2 

OPTION

NO	NAME	TYPE	CODE	REMARKS
1	Whip Antenna	150M-W2VN	000-113-498	w/ bracket
2	Coaxial Cable	5D-2V 000-111-063 *(White Sheath)*	10 meter long 000-111-064	20 meter long
3	Rectifier	PR-101	000-053-754	IN : 110/220Vac, OUT : 13.8Vdc
4	DC-DC Converter	PC-208	000-053-761	IN : 24Vdc, OUT : 12Vdc
5	External Speaker	HCB100D	000-113-352	4 ohms, 4W

Installation

GENERAL NOTES ON INSTALLATION

Any radio equipment can provide its intended performance only when it is installed properly. Prior to starting installation, the following precautions should be kept in mind.

Avoid water spray

Though the equipment is spray-proof, continued exposure to the environment can shorten its life. It is recommended to install the equipment in the cabin or at least in a shaded place.

Avoid shock or vibration

The equipment is designed to withstand possible shocks and vibrations normally experienced on small boats. However, excessive and continued shock and vibration can shorten the life of the equipment. Where necessary, appropriate shock absorption measures should be taken.

Avoid hot environment

Even though the LCD used on the equipment is quite legible even in the sunlight, it is requested to keep the transceiver out of the direct sunlight or at least shaded because of the heat that can build up in the cabinet.

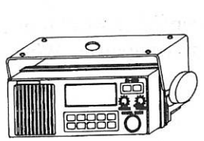
The cabinet of the transceiver, especially the rear panel, gets warm after a long transmission.It is requested to provide some space around the transceiver to allow good air circulation.

Avoid onboard noise

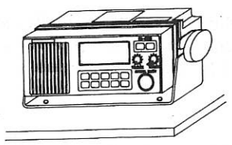
Though the equipment is well shielded with cast-aluminium cabinet, it is requested to install the transceiver away from radio and navigation equipment such as SSB/CB radiotelephone, direction finder or Loran receiver to avoid mutual interferences. Separate from radar too, as much as possible.

MOUNTING TRANSCEIVER

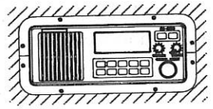
The equipment can be mounted on overhead, tabletop, flushmount or bulkhead with an optimum viewing angle by using the hanger bracket supplied. The hanger should be installed adequately to minimize wave shock and engine vibration. If necessary, reinforce the mounting location by lining block or doubling plate.



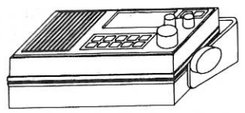
CEILING MOUNT



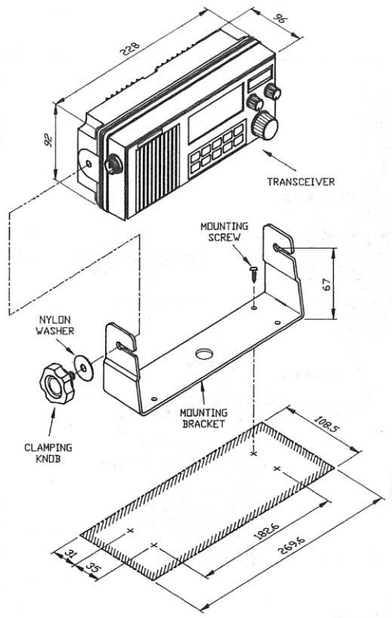
TABLETOP MOUNT



FLUSH MOUNT



BULKHEAD MOUNT

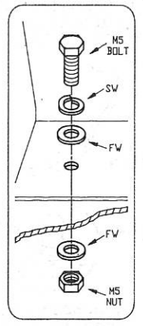


MOUNTING AREA

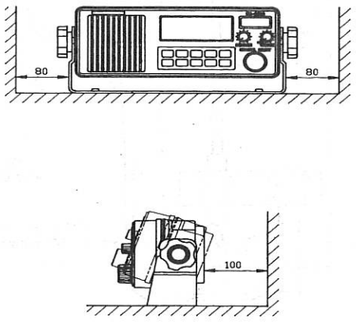
MOUNTING PROCEDURE

1. Drill 4 pilot holes for the mounting bracket.
2. Fix the bracket with the woodscrews supplied.

   For thin walls, use bolts and nuts instead of the woodscrews.
3. Mount the transceiver unit on the mounting bracket and tighten the knob screws at an adequate viewing angle.

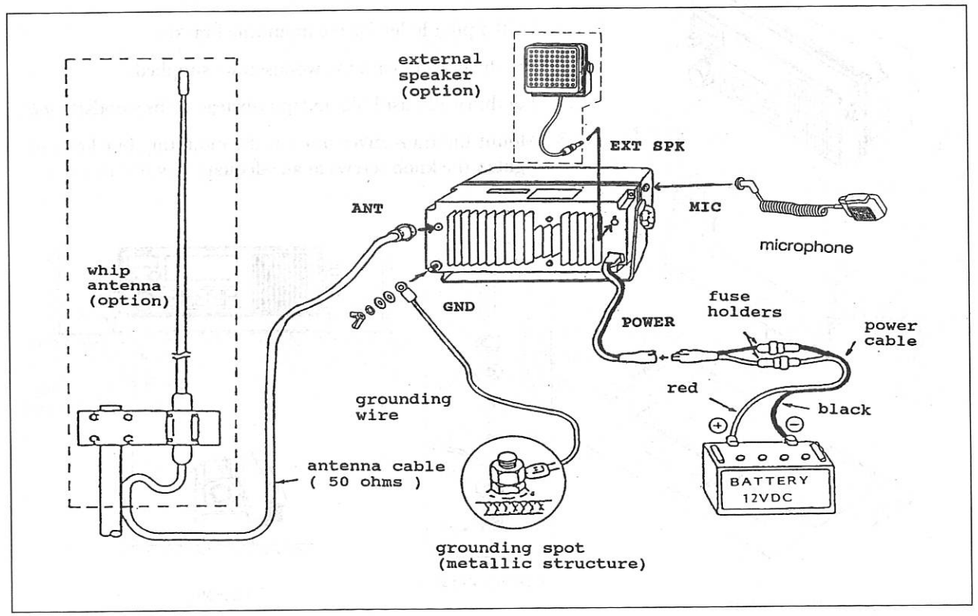


(FOR THIN WALLS)



CLEARANCE

CABLE CONNECTIONS



POWER CONNECTION

The equipment is designed to operate from 12VDC power supply. For 24VDC or AC mains, use separate DC-DC converter or rectifier respectively.

A 3 meter cable, fitted with two snap-in fuse holders, is provided. Connect the wire ends to a battery, distribution box or said unit; the red lead to positive (+) terminal and the black lead to negative (-) terminal. Refer to the illustration on page 9. Make sure to leave some wire behind the transceiver to gain easy access to the fuse holders.

If it is necessary to extend the power cable, use a heavy wire depending on the extension distance. Refer to the guideline below.

LENGTH	US GAUGE (AWG)	BRITISH GAUGE
5M (17')	14	16
10M (33')	10	12
20M (66')	8	10

Lighter wire will spoil the performance of the transceiver, or even cause fire in the worst case. Do not twist wrap the joints but solder or use screw terminal when splicing the extension cable, and ensure all connections are tight, clean and well insulated.

ANTENNA CONNECTION

The antenna is the most important item to obtain the expected performance of your FM-2610. Provide a location as high and clear as possible, free from the influence of nearby antenna, rigging and masts.

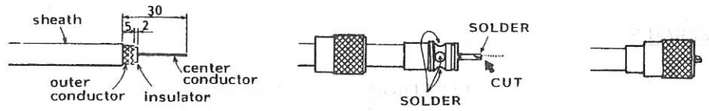
The optional antenna supplied from Furuno is a 5/8λ whip (1.2 meter or 4') containing a matching network in its base.

Any good quality antenna, complying with the following requirements, may be arranged locally. A high-gain antenna is most preferable.If you are not sure, consult with your dealer for the most suitable one.

- **Frequency range** 155MHz to 164MHz
- **Impedance** 50 ohms
- **Polarization** Vertical
- **Handling power** 30W
- **Quality** To be able to withstand against possible marine environment

Any 50 ohm coaxial cable heavier than 5D-2V (equivalent to RG-212/U) may be used for connection between the antenna and the transceiver.To extend the antenna cable longer than 20m (67'), use heavier coaxial cable, such as 8D-2V or RG-213/U, to minimize the power loss and signal attenuation through the cable. Make sure to leave some service loop behind the transceiver for future service and maintenance.

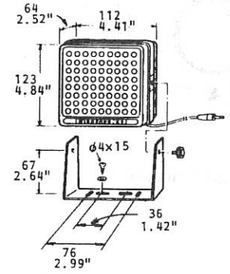
When the antenna cable is laid, solder the "M" type plug onto the cable end. See the illustrations below.



GROUND CONNECTION

To obtain maximum sensitivity of the receiver and to minimise mutual interference with other equipments, the transceiver cabinet must be grounded properly to the grounding bus. If grounding bus is not available, a good connection to the hull will be sufficient on a metallic boat. On a wooden or fibreglass boat, try to ground to the engine block. (Consult with a shipyard or service shop.)

EXTERNAL SPEAKER

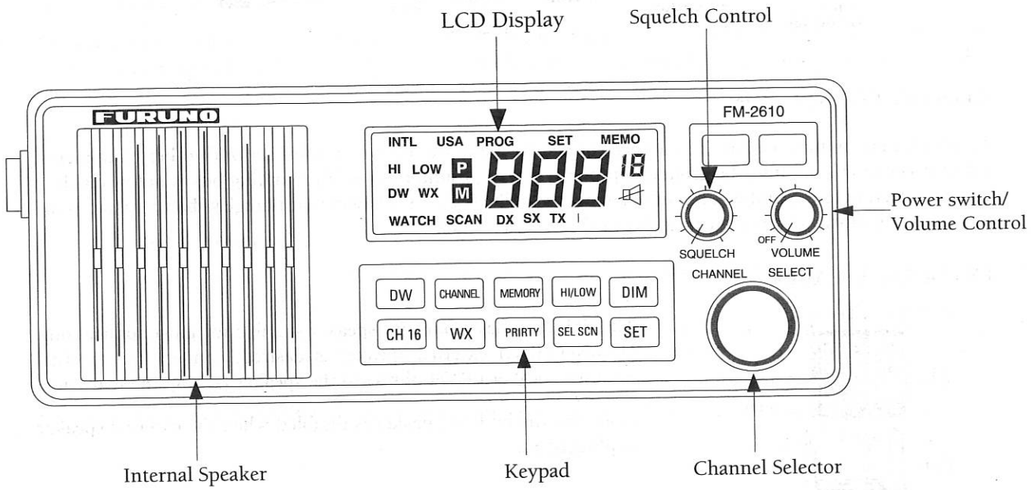


The FM-2610 has a built-in speaker suitable for most applications. However, if an external speaker is desired, connect the external optional speaker (4W/4 ohms) to the speaker jack on the rear panel

Note that the built-in speaker is disabled when the external speaker is plugged in.

Operation

OPERATING CONTROLS



1. Volume Control/Power Switch

Changes the audio level of the loudspeaker.

Rotate the control clockwise to turn on the equipment. Turn it fully counterclockwise, beyond click, to switch off the power.

2. Squelch Control

This is used to hear communication signal only by blocking off unwanted noise which is remarkable when no signal is received. Set at a position where noise just fades out while turning it clockwise.

3. Channel Selector

Press the channel key and rotate the channel selector to select a channel required. Rotating it clockwise increments the channel or memory number, and vice-versa.

4. Keypads

CHANNEL

- Recalls "CHANNEL MODE".
- Pressing for more than 1 second turns to "ALL SCAN MODE".

WX

- Recalls "WEATHER MODE".
- Pressing for more than 1 second turns to "WEATHER SCAN MODE".

MEMORY

- Recalls "MEMORY CHANNEL MODE".
- Pressing for more than 1 second turns to "MEMORY SCAN MODE".
- Pressing for more than 1 second after pressing [SET] key turns to "MEMORY PROGRAM MODE".

CH16

- Recalls "CH16 MODE" instantly.

PRIRTY

- Recalls "PRIORITY MODE".
- Pressing for more than 1 second turns to "ON WATCH MODE".

DW

- Recalls "DUAL WATCH MODE".

SEL SCN

- Recalls "SELECT CHANNEL MODE".
- Pressing for more than 1 second turns to "SELECT SCAN MODE".

HI/LO

- Alternates transmitter output power, HIGH or LOW.

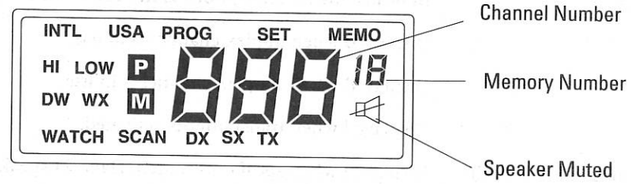
DIM

- Controls brightness of back lit LCD display/front panel.
- Also alternates in turning speaker on/off.

SET

- Used in setting Memory channel programming, Select channel, Speaker on/off and Priority channel.

STATUS INDICATORS

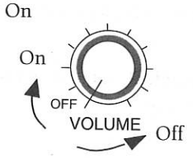


1. INTL — Displayed when the international channel mode is selected.
2. USA — Displayed when a US channel is in use.
3. PROG — Displayed when a programmable channel is in use.
4. HI — Indicates the transmitter is working in high power output.
5. LOW — Indicates the transmitter is working in low power output.
6. P — Displayed when priority channel is selected.
7. DW — Displayed when receiver is in dual watch mode.
8. WX — Displayed when weather channel is selected.
9. M — Indicates that the channel is a SELECT channel.

10.	WATCH	Displayed when in ON WATCH mode.
11.	SCAN	Indicates the radiotelephone is in SCAN mode.
12.	DX	Displayed when duplex channel is in use.
13.	SX	Displayed when simplex channel is in use.
14.	TX	Displayed when transmitter is activated.
15.	(SPEAKER MUTED)	Displayed when speaker is muted. Handset speaker is not affected.
16.	MEMO	Displayed when in memory channel mode or when a channel is being stored.
17.	Memory Number	Indicates the memory number in use.
18.	SET	Indicates that set key is depressed.
19.	Channel Number	Indicates the channel number.

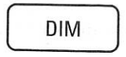
RECEIVING

1. Power On



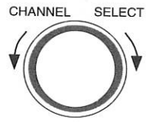
Turn the VOLUME control clockwise, beyond click, to turn on the power, and the display will read the previous mode with the last used channel. Turn it fully counter-clockwise, beyond click, to switch off the power.

2. Adjusting Dimmer



Hit the [DIM] key until you get an adequate brightness of the LCD display and the keyboard. At each pressing, the brightness changes dim, medium, bright and off.

3. Selecting Channel



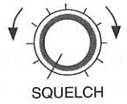
Rotate the CHANNEL SELECTOR for the desired channel number. A clockwise rotation increments the channel number, and vice versa.

4. Adjusting Volume

Turn the VOLUME control for an optimum sound level. If the "" (speaker off mark) is present on the display, either listen on the handset or switch on the speaker.

5. Adjusting Squelch (turn slowly)

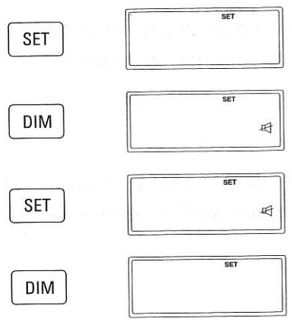
Turn slowly



Turn the SQUELCH control slowly clockwise until the receiver noise is muted. Perform this operation when no traffic is being received. Do not turn the SQUELCH too far clockwise, otherwise you will miss weak incoming signals.

NOTE : To obtain correct scan watch/dual watch response, adjust the SQUELCH control precisely.

6. Switching Speaker On/Off



1) Press the [SET] key, making the 'SET' mark to appear.

2) Press the [DIM] key, causing the 'SET' mark to disappear.

If previously the speaker was "ON", the speaker is now turned off and the speaker muted sign appears .If the speaker was previously "OFF", then the speaker is turned on and the speaker muted sign disappears.

7. Beep Sound

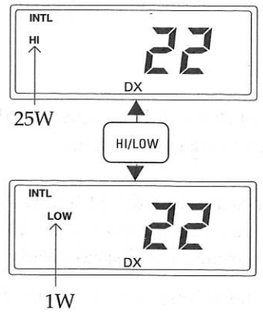
Beeps and audible alarms are generated in the following conditions :

1) One short beep : Valid key operation

2) 4 short beeps : Invalid key operation

TRANSMITTING

1. Selecting Transmitter Power



To set the transmitter to high or low power, hit the [HI/LOW] key. If the 'LOW' mark appears on the LCD, then low power (1W) is selected. If 'HI' appears, then high power (25W) is selected.

Transmission at low output is recommended for short range communications or in harbour areas to minimize interference to others.

NOTE :

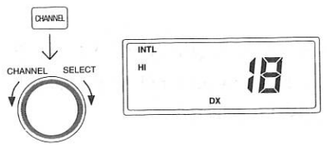
The transmitter is automatically set to low on the following channels:

International : CH 15, CH 17.

USA : CH 13*, CH 17, CH 67*

** To operate the USA channel 13 or 67 in high power, keep [HI/LOW] key pressed while talking into the microphone.*

2. Checking Operating Channel

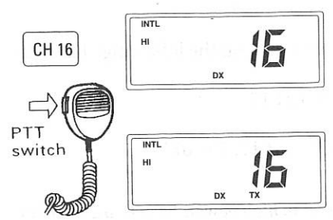


1) Hit the CHANNEL key to return to the ordinary marine channel mode : INTL or USA.

   This step can be omitted if you are already on ordinary channel.

2) Rotate the CHANNEL SELECTOR for the channel you want to use, and listen carefully to confirm that the channel is open.

3. Calling on Channel 16



1) Hit the CH16 key to select Channel 16 instantly. Confirm that the channel is not busy before commencing transmission.

2) Pick up the microphone (or handset), press the PTT (press-to-talk) switch and then call the one you want to make contact. Hold the microphone fairly close to your mouth and speak clearly.

   Press the PTT switch to talk and release it to listen for the response.

IMPORTANT :

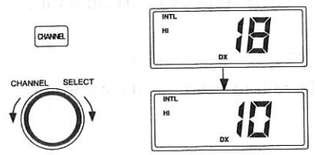
CH16 is important for distress calling. Remember to keep the communications as short as possible to give way to others.

4. Switching to Working Channel

When contact is established on channel 16, turn the CHANNEL SELECTOR to the working channel as instructed by the coastal station operator.

Press the PTT switch to talk and release it to listen for the response.

CHANNEL MODE



When [CHANNEL] key is pressed, the last accessed channel of either INTL or USA is selected. To select any desired channels, just turn the channel selector.

Switching between USA and INTL Channels :

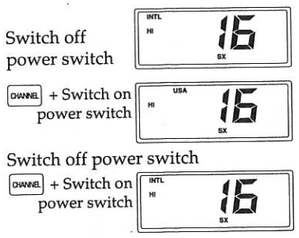
1) Select "CHANNEL MODE".

2) Turn off power switch.

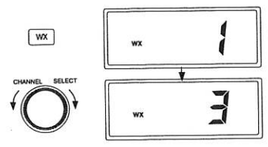
3) Press [CHANNEL] key while turning on power switch.

4) If the channel is USA in step 1, then channel becomes INTL.

5) If the channel is INTL in step 1, then channel becomes USA.



WEATHER MODE

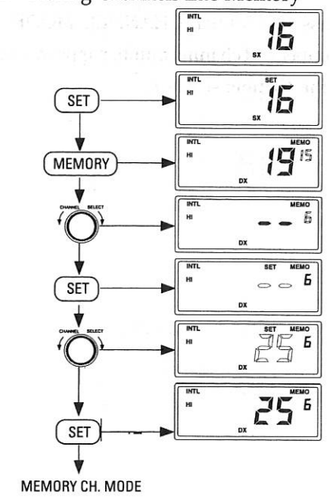


Press [WX] key to access "WEATHER MODE", and the last accessed weather channel appears. To change the channel, turn the channel selector.

MEMORY MODE

You may feel it's awkward to search for your desired channel stepping through a number of less-used channels. By gathering your favorite (often-used) channels into one MEMORY channel group, you can gain quick access to a desired channel, or even scan channels within the group. Up to 20 channels, picked up from International channels, USA channels and Weather channels, can be stored as the MEMORY channels. (Similar grouping function, SELECT channel, is available, but it is limited to ordinary channels International or USA.)

1. Storing Channels into Memory



Suppose you want to store channel 25 (INTL) into memory channel number 6.

1) Press the [SET] key and the 'SET' appears on the LCD.

2) Press the [MEMORY] key until 'SET' disappears and previously accessed MEMO and channel number appears. MEMO number also blinks.

3) Turn the selector until the desired MEMO number is selected.

4) Press [SET] key, and the MEMO number will stop blinking and channel number starts blinking.

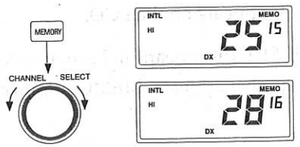
5) Turn the selector to select the desired channel.

6) Press [SET] key to store the channel number into the selected MEMO number. When storing is done, mode will go to "MEMORY CHANNEL MODE". Up to 20 channels can be stored, including programmable, weather, INTL and USA channels.

When programming is completed, make a note on the "MEMORY CHANNEL LIST" in this manual for your future reference.

The contents of memory will be preserved even when the power is turned off.

2. Accessing Memory Channel

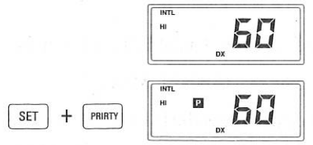


Press [MEMORY] key to access "MEMORY CHANNEL MODE". Previously accessed memory number and channel number appears. To change memory channel, turn the channel selector.

PRIORITY CHANNEL MODE

The PRIRITY key permits single-key access to a user-defined channel. Dual-watching between the PRIORITY channel and a desired channel, so called "ON WATCH", is also available. The PRIORITY channel can be International, USA, Weather or MEMORY channel, but only one channel at a time. Registering new PRIORITY channel cancels former one.

1. Registration & alteration of Priority Channel

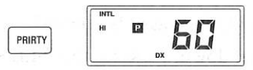


1) Select a desired channel from "CHANNEL MODE", "WEATHER MODE" or "MEMORY CHANNEL MODE".

2) While the [SET] key is pressed down, pressing the [PRIRTY] key makes the 'P' mark appear on the LCD and the registration of PRIORTY channel is completed.

3) When alteration of a priorty channel is required, repeat steps 1) and 2) and another PRIORTY channel is registered.

2. Accessing Priority Channel

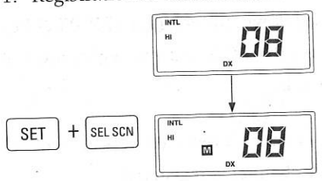


Press the [PRIRTY] key to enable the PRIORTY channel. If PRIORTY channel is not registered, an alarm of 4 beeps is heard.

SELECT CHANNEL MODE

You may feel it's awkward to search for your desired channel stepping through a number of less-used channels. By gathering your favorite (often-used) channels into one SELECT channel group, you can gain quick access to a desired channel, or even scan channels within the group. You can pick up as many channels as possible from within the ordinary channels (International or USA). But notice that selecting too many channels spoils the advantage (quick access) of the SELECT channel facility. (Similar grouping function, MEMORY channel, which permits mixed channel mode, is also available.)

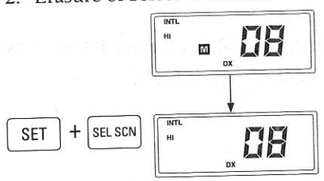
1. Registration of Select Channels



Only INTL or USA channels can be registered as SELECT channels.

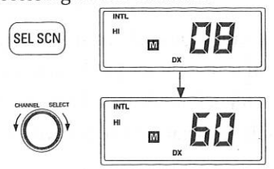
1) A desired channel is selected from "CHANNEL MODE".
2) While the [SET] key is pressed down, press the [SEL SCN] key and the mark 'M' appears on the LCD and registration is completed.

2. Erasure of Select Channels



1) Hit [CHANNEL] key to enter into "CHANNEL MODE".
2) The desired registered channel to be erased is selected.
3) While the [SET] key is pressed down, pressing the [SEL SCAN] key causes the 'M' mark to disappear and the channel is erase as a SELECT channel.

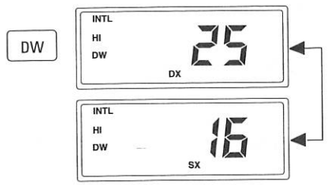
3. Accessing Select Channels



Press [SEL SCN] key to access "SELECT CHANNEL MODE". Smallest registered channel number is displayed. Turn the channel selector to access to a desired channel number.

DUAL WATCH MODE

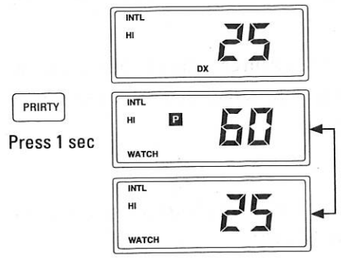
Dual watch provides scanning over CH 16 (international distress and calling) and a desired channel alternately (1 second for the desired channel and 0.07 second for channel 16). If a signal is present on CH 16, the receiver locks on channel 16 and ignores the signal on the other channel. After the signal on channel 16 is gone, the receiver continues to monitor for another 2 seconds, then reverts to dual watch. If signal is present on the desired channel, the receiver continues dual watch.



1) Select a channel other than CH16.
2) Press [DW] to make "DW" mark appear and start indication between the desired channel and CH16.
3) Dual watch can be terminated by pressing PTT switch to return to the desired channel or by pressing the relevant keys to move to the other modes.

ON WATCH MODE

ON WATCH is a kind of dual watch function between the PRIORITY channel and a desired channel. If ON WATCH is enabled, the receiver stays 3 seconds on the desired channel and 0.07 second on the PRIORITY channel, and repeats this cycle until some signal is detected on the PRIORITY channel. If a signal is present on the PRIORITY channel, the receiver locks on that channel and ignores the other. In 2 seconds after the signal on the PRIORITY has gone, the receiver resumes dual watch.



1) Select a desired channel from "CHANNEL MODE", "WEATHER MODE" OR "MEMORY CHANNEL MODE".
2) Press the [PRIORTY] key for more than 1 second until 'WATCH' appears.

   The unit then dual-watches between the PRIORTY channel and the desired channel (3 seconds for the desired channel and 0.07 seconds for the PRIORTY channel).
3) ON WATCH can be terminated by pressing the PTT switch to return to PRIORTY channel or by pressing the relevant keys to switch modes.

SCANNING MODE

The unit scans user designated channels and channel 16.

Scanning time is 0.07 second on channel 16 and 1 second on the other channels.

While scanning, hitting the [SET] key increments the channel number.

If a signal is present on channel 16, the receiver locks to channel 16. In two seconds after the signal is gone, the unit reverts back to scanning again.

If a signal is present on a channel other than channel 16, the radio stops scanning and starts dual watching between channel 16 and that channel until the signal disappears.

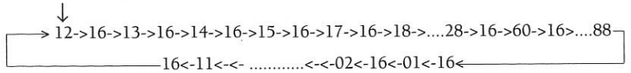
CHANNEL
hold 1 sec

A. All Scan Mode

Press and hold the [CHANNEL] key for more than 1 second until the 'SCAN' mark appears on the LCD.

Scan starts from the latest set channel.

Scan to start

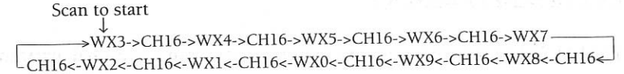


WX
hold 1 sec

B. Weather Scan Mode

Press and hold the [WX] key for more than 1 second until the 'SCAN' mark appears. Scan starts from the latest weather channel.

Scan to start

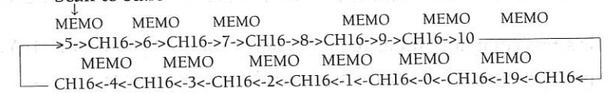


MEMORY
hold 1 sec

C. Memory Scan Mode

Press the [MEMORY] key and hold for more than 1 second until 'SCAN' appears. Scan starts from the latest Memory channel.

Scan to start

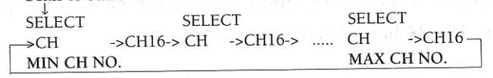


SEL SCN
hold 1 sec

D. Select Scan Mode

Press the [SEL SCN] key and hold for more than 1 second until the 'SCAN' mark appears. Scan starts from the minimum number channel registered in "SELECT CHANNEL MODE".

Scan to start



E. To Terminate Scanning

Scanning can be terminated by pressing PTT switch or by pressing the relevant keys to move to the other modes.

General knowledge on operating Marine VHF

RULES AND MANNERS

The FM-2610 fully complies with requirements for international maritime VHF radio service. And it is intended to be used by a person who holds valid radio operator license and station call sign.

Following are some important rules, regulations and manners on operating the equipment.

- Whenever the radio is turned on, keep watch on channel 16 for distress or calling message.
- Distress communications have absolute priority. If you hear a MAYDAY, talk only if you can help, and be prepared to offer assistance or relay the distress message.
- Listen before transmitting to avoid interfering with other communications.
- The ship Radiotelephones Station Licensee is responsible for recording in a communication log all contacts made over the telephone and watch period on channel 16. All distress, emergency and safety messages must be recorded in detail. Entries must show boat's name, call sign, watch start/stop times, and operator's signature. Use 24-hour notation to record time.

- Radio waves is public property, keep all communications as brief and clear as possible.
- Declare ID or call sign at the beginning and end of each communication.
- Use the appropriate channel for the purpose of communication.
  (Refer to channel usage on the next page.)
- Do not divulge contents of communications nor use them for private benefit without permission.
  (This does not apply for distress communications.)
- Be aware that many people are listening. Do not use indecent or profane language.

CHANNEL USAGE

The FM-2610 contains all the channels assigned for maritime service. However, each channel is intended to be used for particular purpose (s). The following shows common usage for some important channels.

CH 16	DISTRESS, SAFETY and CALLING for Intership and Ship-to coast
CH 06	SAFETY for intership only
CH 08	General Intership
CH 12/14	PORT OPERATIONS for Intership and Ship-to-coast
CH 20/22	PORT OPERATIONS for Ship-to-coast (CH 22 is simplex in USA mode, and is assigned for communications with U.S.C.G.)
CH77	Intership (in USA, limited for port operations : communications with pilots regarding the movement and docking of ships. The output power to be less than 1W.)

Refer also to channel/frequency list for general use of each channel. (pages 49 to 50)

COMMUNICATION DISTANCE

The FM-2610 operates on VHF band assigned for maritime mobile stations. (156.5 MHz to 163.0 MHz)

VHF radio wave, unlike LF or HF, propagates like light ray. Thus, communication is available only with one visible above the horizon, so called line-of-sight basis.

Under normal propagation conditions, however, refractive index of atmosphere decreases with height so that radio waves travel more slowly near the seasurface than at higher altitude. That is, the radio wave is bent along the earth and reaches slightly beyond the geographical horizon.

Even if a clear line-of-sight condition is given, radio wave is attenuated through the signal path. The communication distance is limited also by transmitter power, antenna efficiency and receiver sensitivity.

It is practically known that the average communication range, using 25W marine VHF, is **10 to 15 n.m. for ship-to-ship** and **20 to 30 n.m. for ship-to-shore.**

Note that the radio barrier in the signal path, such as big boat, crane, building or mountain, can destroy VHF communications even for short distance.

Maintenance

The FM-2610 is designed to provide trouble-free operation for years. It is, however, recommended to inspect and maintain the following points to minimise possibility of an equipment failure and assure optimum performance. Be sure to disconnect the power cable at the fuse holders before maintenance work.

CLEANING

Transceiver

Keep the unit clean and dry all times. Dust or loose dirt accumulated on the front panel and knobs should be wiped off with a soft, dry cloth. Use mild detergent and water on a cotton tipped swab or soft cloth in stubborn case.

Caution : Never use plastic solvents, such as thinner or acetone for cleaning. It may dissolve paint coating/ marking on the front panel and cabinet case.

Plugs

Check all plugs for dust or corrosion. If corroded, polish the contact and re-tighten securely.

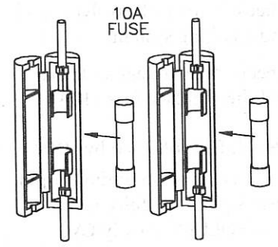
ANTENNA SYSTEM CHECK

Since the antenna is exposed to direct sunshine and/or salt water spray, it is subjected to corrosion or salt water immersion at the antenna basement. The physical damage, such as crack, may sometimes be expected on the element under severe ship's vibration. Should the trace of cracks or water immersion found, contact your local authorised FURUNO dealer for servicing.

BATTERY CHECK

The FM-2610 operates normally at any voltage between 11 and 15Vdc. If the battery voltage is out of ratings, check the battery liquid or the charging system of your boat. Check also rust or corrosion at the battery terminals and the ship's mains switch-board for poor contact.

FUSE REPLACEMENT



To prevent the transceiver from serious damage, two 10A fuses are provided in the snap-in fuse holders on the power cable. The fuse protects against overvoltage/reverse polarity of the ship's mains or internal fault of the equipment. If the fuse has blown, first find the cause of the problem before replacing it with a new one.

Caution : Do not use a fuse rated for more than 10A since it may cause more serious damage to the equipment.

Troubleshooting

MINOR TROUBLESHOOTING

The cause of most VHF problems is the antenna/antenna feeder or power supply, so they are the first places to be checked if there is a trouble. The list below provides simple troubleshooting that can be done by the operator.

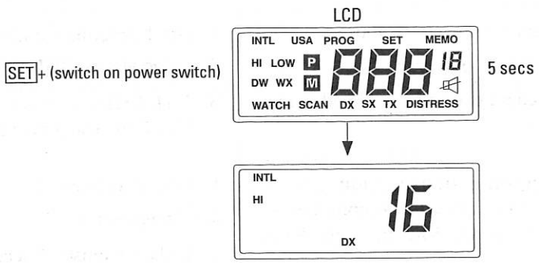
DO NOT ATTEMPT TO CHECK INSIDE THE TRANSCEIVER. CARELESS HANDLING MAY CAUSE PERMANENT DAMAGE TO THE TRANSCEIVER.

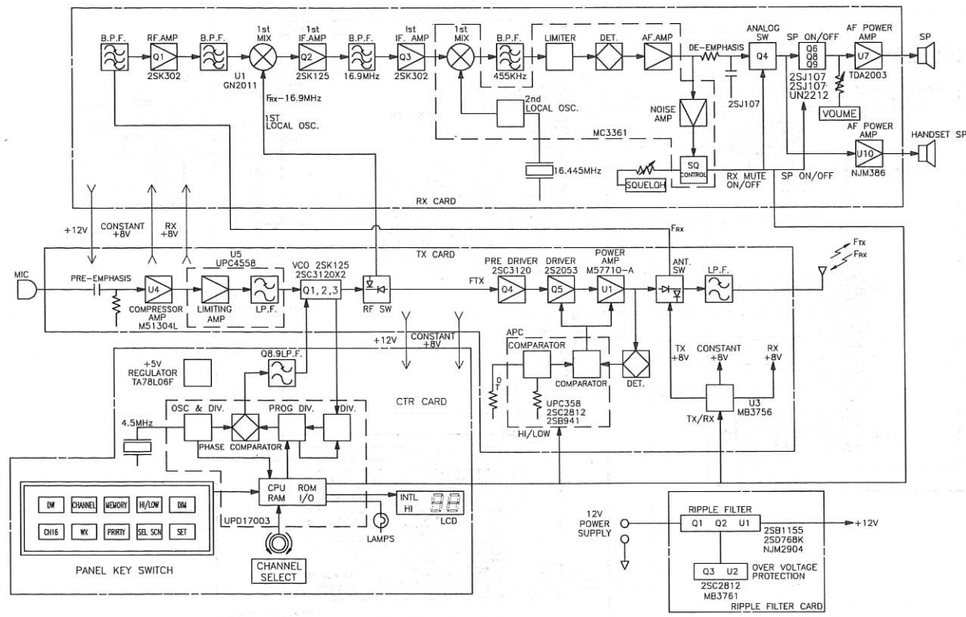
SYMPTOMS	POSSIBLE CAUSE	REMEDY
Nothing happens.	1. Power is off at mains switchboard 2. Power lead is loose or pulled out. 3. Mains battery is discharged. 4. Fuse has blown.	1. Turn mains switch on. 2. Check plug, and check connections on battery. 3. Check battery electrolyte level, and charging system. 4. Check mains voltage and polarity and then replace fuse (10A).
LCD looks normal but no audio output.	1. Speaker is off. 2. SQUELCH setting is too high. 3. VOLUME setting is too low. 4. External speaker connection is loose.	1. Press [SET] followed by [DIM]. 2 to 3. To confirm audio output, turn SQUELCH fully CCW and turn VOLUME slowly CW. 4. Check connection.

SYMPTOMS	POSSIBLE CAUSE	REMEDY
Noise but no or poor signal reception	1. ANT connector is loose 2. SQUELCH setting is too high. 3. VOLUME setting is too low. 4. External speaker connection is loose.	1. Check ANT connector 2. Turn SQUELCH anti-clockwise 3. Line-to-sight is a range of VHF communications 4. Connect the speaker securely
TX appears but no or low output power.	1. Antenna connector is loose 2. Power setting is LOW. 3. The channel is to be operated in low power.	1. Check antenna connector. 2. Set power to HIGH. 3. INTL CH15, 17 and USA CH13, 17, 67 are low power channels.
TX mark does not appear when PTT switch is pressed.	1. Attempting transmission over a channel assigned for reception only; CH15 (USA), WX0 through WX9, etc.	1. Refer to channel list. 2. Change mode. 3. Replace handset if necessary.
Cannot use programmable channel.	1. Private channels are not programmed.	1. Authorization required to use private channels.
Scan and DW modes do not function	1. SQUELCH setting too low.	1. Adjust SQUELCH control so noise just fades out.

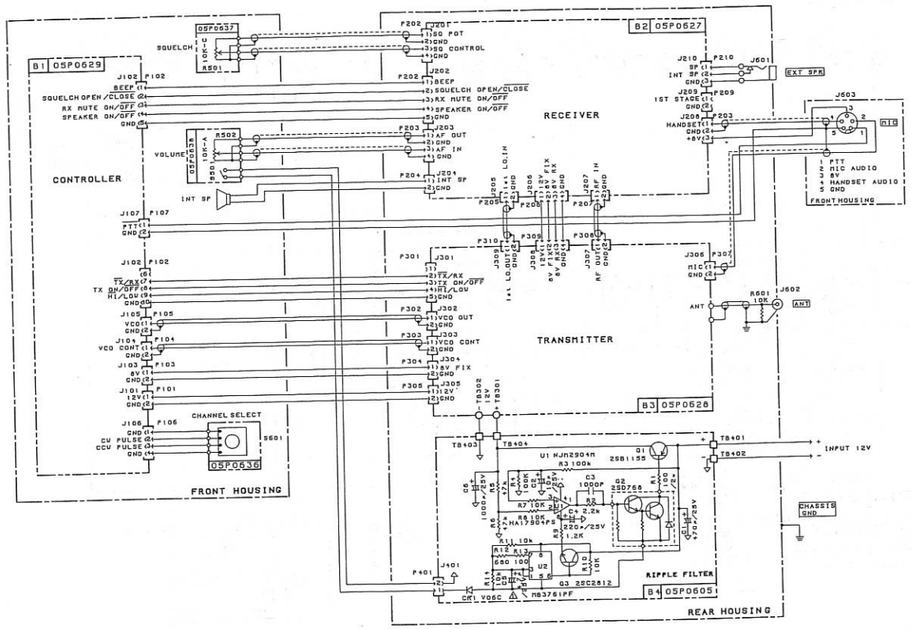
DISPLAY TEST

If the LCD display appears to be abnormal, conduct the LCD display self-test. Press the [SET] key while turning on the power switch. If the LCD display is normal, all the segments on the LCD shown below will be displayed for 5 second. The transceiver will then go into normal CH16 reception. Watch the LCD carefully for any missing segment.

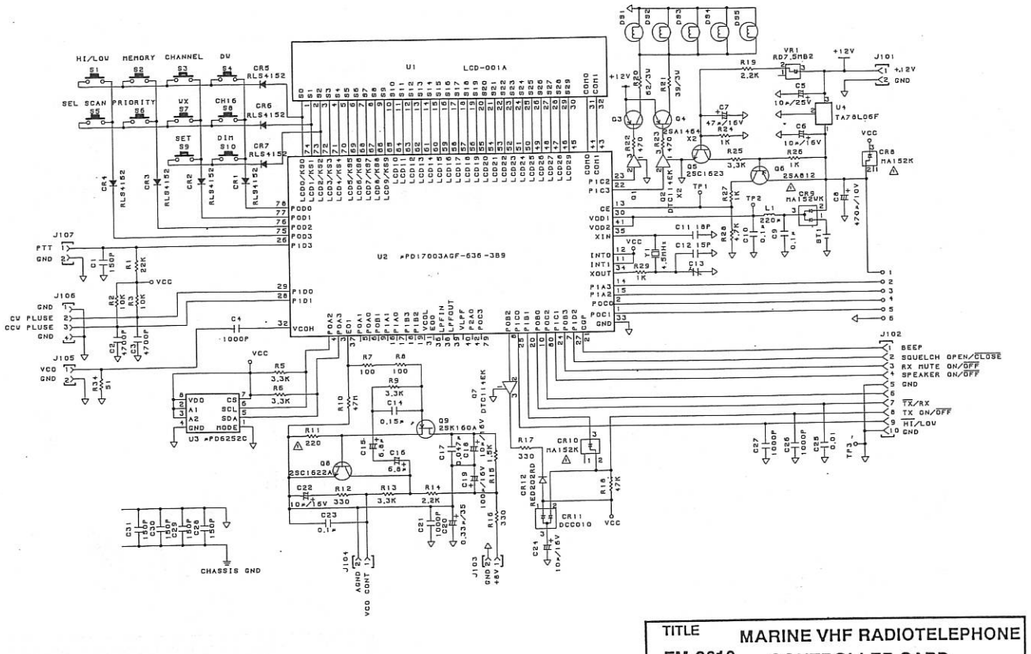




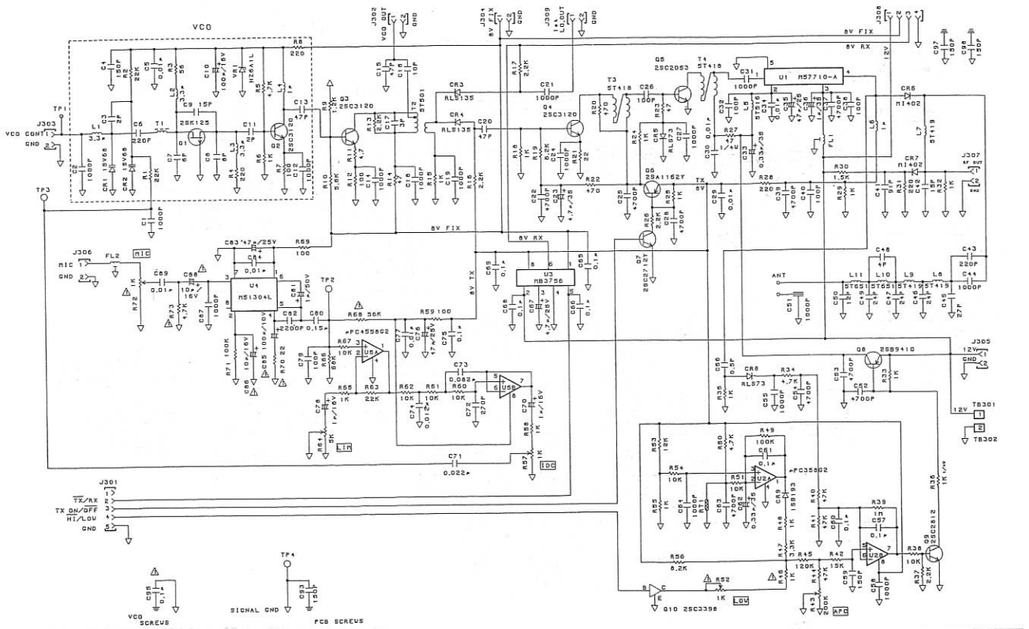
TITLE	MARINE VHF RADIOTELEPHONE
FM-2610	BLOCK DIAGRAM
DWG.NO.	E5527 – B01 – A



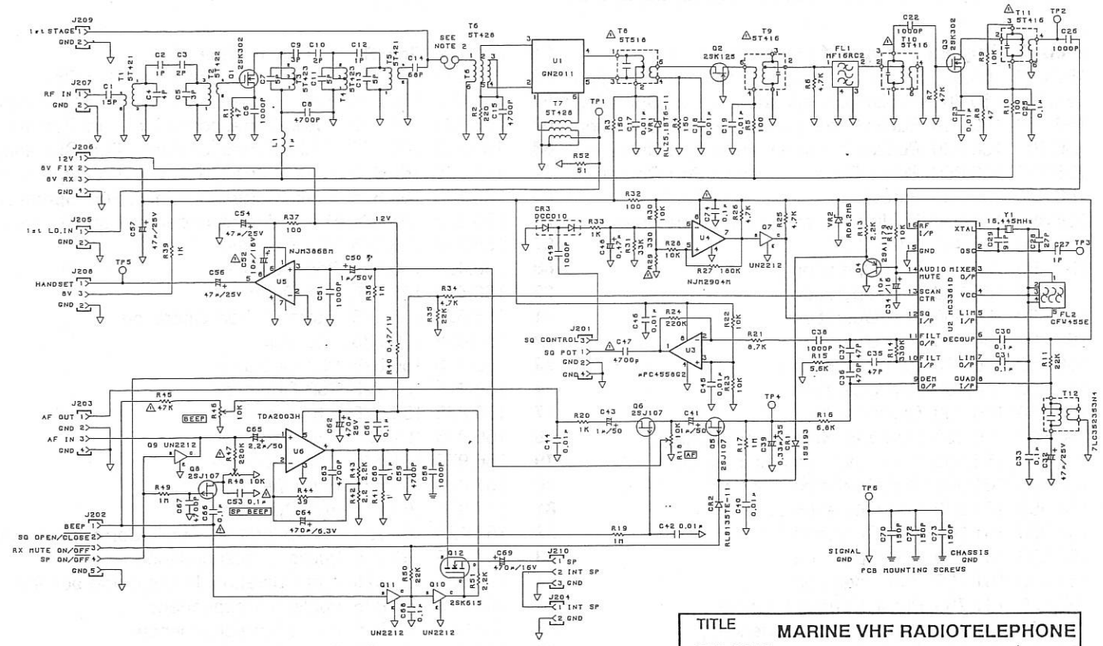
TITLE	MARINE VHF RADIOTELEPHONE
FM-2610	GENERAL SCHEMATIC DIAGRAM
DWG.NO.	05-001-3693



TITLE	MARINE VHF RADIOTELEPHONE
FM-2610	CONTROLLER CARD
DWG.NO.	05-001-3694



TITLE	MARINE VHF RADIOTELEPHONE
FM-2610	TRANSMITTER CARD
DWG.NO.	05-001-3695



TITLE	MARINE VHF RADIOTELEPHONE
FM-2610	RECEIVER CARD (1/2)
DWG.NO.	05-001-3696

INTERNATIONAL MARINE VHF CHANNEL FREQUENCIES

CH	Ship Tx	Ship Rx	Type of Operation
01	156.050	160.650	Public Correspondence, Port Operation
02	156.100	160.700	Public Correspondence, Port Operation
03	156.150	160.750	Public Correspondence, Port Operation
04	156.200	160.800	Public Correxpondence, Port Operation
05	156.250	160.850	Public Correspondence, Port Operation
06	156.300	156.300	Safety
07	156.350	160.950	Public Correspondence, Port Operation
08	156.400	156.400	Inter Ship
09	156.450	156.450	Port Operation
10	156.500	156.500	Port Operation
11	156.550	156.550	Port Operation
12	156.600	156.600	Port Operation
13	156.650	156.650	Bridge-to-Bridge
14	156.700	156.700	Port Operation
15	156.750	156.750	Coast-to-Ship, 1W
16	156.800	156.800	**Distress, Safety and Calling**
17	156.850	156.850	State-controlled, Ship-to-coast, 1W
18	156.900	161.500	Port Operation
19	156.950	161.550	Port Operation
20	157.000	161.600	Port Operation
21	157.050	161.650	Port Operation
22	157.100	161.700	Port Operation
23	157.150	161.750	Public Correspondence
24	157.200	161.800	Public Correspondence
25	157.250	161.850	Public Correspondence
26	157.300	161.900	Public Correspondence
27	157.350	161.950	Public Correspondence
28	157.400	162.000	Public Correspondence
60	156.025	160.625	Public Correspondence, Port Operation
61	156.075	160.675	Public Correspondence, Port Operation
62	156.125	160.725	Public Correspondence, Port Operation
63	156.175	160.775	Public Correspondence, Port Operation
64	156.225	160.825	Public Correspondence, Port Operation
65	156.275	160.875	Public Correspondence, Port Operation
66	156.325	160.925	Public Correspondence, Port Operation
67	156.375	156.375	Port Operation
68	156.425	156.425	Port Operation
69	156.475	156.475	Port Operation
71	156.575	156.575	Intership, Port Operation
72	156.625	156.625	Intership
73	156.675	156.675	Port Operation
74	156.725	156.725	Port Operation
77	156.875	156.875	Intership, 1W
78	156.925	161.525	Port Operation
79	156.975	161.575	Port Operation
80	157.025	161.625	Port Operation
81	157.075	161.675	Port Operation
82	157.125	161.725	Port Operation, Public Correspondence
83	157.175	161.775	Public Correspondence
84	157.225	161.825	Port Operation, Public Correspondence
85	157.275	161.875	Public Correspondence
86	157.325	161.925	Public Correspondence
87	157.375	161.975	Public Correspondence
88	157.425	162.025	Public Correspondence

USA MARINE VHF CHANNEL FREQUENCIES

(Suffix A denotes simplex channel peculiar to USA mode.)

CH	Ship Tx	Ship Rx	Type of Operation
01A	156.050	156.050	Port Operation, Commercial
02A	156.100	156.100	
03A	156.150	156.150	
04A	156.200	156.200	
05A	156.250	156.250	
06	156.300	156.300	Intership Safety
07A	156.350	156.350	Commercial
08	156.400	156.400	Commercial (Intership)
09	156.450	156.450	Commercial and Non-commercial
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial
12	156.600	156.600	Port Operation
13	156.650	156.650	Bridge-to-Bridge, Navigational, 1W
14	156.700	156.700	Port Operation
15		156.750	Environment (Receive only)
16	156.800	156.800	**Distress, Safety and Calling**
17	156.850	156.850	State-controlled, Ship-to-coast, 1W
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port Operation
21A	157.050	157.050	US Government
22A	157.100	157.100	Coast Guard Liason
23A	157.150	157.150	US Government
24	157.200	161.800	Public Correspondence
25	157.250	161.850	Public Correspondence
26	157.300	161.900	Public Correspondence
27	157.350	161.950	Public Correspondence
28	157.400	162.000	Public Correspondence
60	156.025	160.025	
61	156.075	160.675	
62	156.125	160.725	
63A	156.175	156.175	Vessel Traffic Service
64	156.225	160.825	
65A	156.275	156.275	Port Operation
66A	156.325	156.325	Port Operation
67	156.375	156.375	Commercial (Intership), 1W
68	156.425	156.425	Non-commercial
69	156.475	156.475	Non-commercial
71	156.575	156.575	Non-commercial
72	156.625	156.625	Non-commercial (Intership)
73	156.675	156.675	Port Operation
74	156.725	156.725	Port Operation
77	156.875	156.875	Port Operation (Intership), 1W
78A	156.925	156.925	Non-commercial
79A	156.975	156.975	Commercial
80	157.025	157.025	Commercial
81A	157.075	157.075	US Government
82A	157.125	157.125	US Government
83A	157.175	157.175	US Government
84	157.225	161.825	Public Correspondence
85	157.275	161.875	Public Correspondence
86	157.325	161.925	Public Correspondence
87	157.375	161.975	Public Correspondence
88A	157.425	157.425	Commercial (Intership)

VHF WEATHER CHANNEL FREQUENCIES

CH	Receive Freq.	Service
WX1	162.550	NOAA Weather
WX2	162.400	NOAA Weather
WX3	162.475	NOAA Weather
WX4	162.425	
Wx5	162.450	
WX6	162.500	
WX7	162.525	
WX8	161.650	Canada Weather
WX9	161.775	
WX0	163.275	

MEMORY CHANNEL LIST (To be filled by operator)

MEMO NO.	Stored Channel No.			Purpose/Remark
0	INTL	USA		
	WX	PROG		
1	INTL	USA		
	WX	PROG		
2	INTL	USA		
	WX	PROG		
3	INTL	USA		
	WX	PROG		
4	INTL	USA		
	WX	PROG		
5	INTL	USA		
	WX	PROG		
6	INTL	USA		
	WX	PROG		
7	INTL	USA		
	WX	PROG		
8	INTL	USA		
	WX	PROG		
9	INTL	USA		
	WX	PROG		

MEMO NO.	Stored Channel No.			Purpose/Remark
10	INTL	USA		
	WX	PROG		
11	INTL	USA		
	WX	PROG		
12	INTL	USA		
	WX	PROG		
13	INTL	USA		
	WX	PROG		
14	INTL	USA		
	WX	PROG		
15	INTL	USA		
	WX	PROG		
16	INTL	USA		
	WX	PROG		
17	INTL	USA		
	WX	PROG		
18	INTL	USA		
	WX	PROG		
19	INTL	USA		
	WX	PROG		

EXAMPLE OF RADIO LOG

SHIP RADIO STATION LOG SHEET
(Recreational Vessels)

Page No._____ Name of Vessel_____ Radio Call_____

DATE[1]	TIME[2] Start	TIME[2] Stop	CHANNEL OR FREQUENCY	PRIORITY MESSAGE TIME[2]	MESSAGE[3]	OPERATOR'S SIGNATURE

[1]Log: Day, Month, Year

[2]Use UTC (formerly known as GMT) or Local Time. Show which used. Use 24-hour system; that is, 8:45 a.m. is entered as 0845, and 2:15 p.m. as 1415.

[3]Record as completely as possible all distress communications transmitted or intercepted and all urgency and safety communications transmitted. Retain logs for at least one year; for 3 years if they include entries related to distress; longer if they concern communications being investigated by the FCC or against which claims or complaints have been filed.

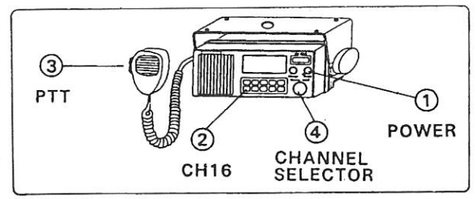
MEMO

DISTRESS CALLING PROCEDURE

① Turn on the **POWER** switch.

② Press the CH16 key, and confirm that channel "16" is displayed in the window.

③ Pick up the microphone (or handset), press its **PTT** switch and then send the distress message.



Speak **SLOWLY**, **CLEARLY** and **CALMLY**.

1. Say : "MAYDAY_ MAYDAY_ MAYDAY."
2. Say : "This is _____, _____, _____." (your boat name)
3. TELL WHERE YOU ARE (What nav. aids or landmarks are near ?)
4. STATE THE NATURE OF YOUR DISTRESS. (fire, collision, etc.)
5. TELL WHAT ASSISTANCE IS REQUIRED.
6. BRIEFLY DESCRIBE YOUR BOAT. _____ (type), _____ (length), _____ (material), _____ (color), _____ (registration no.) _____ (anything else you think will help rescuers to find you.)
7. Say : "I will be listening on channel 16. _____ OVER." (your boat name)

④ Release the **PTT** switch and listen : Coast operator should answer. Follow his directions afterwards. If some other channel is specified, turn the **CHANNEL SELECTOR** dial.
IF NO ONE REPLYS, REPEAT THE ABOVE CALL AGAIN.

FURUNO ELECTRIC CO., LTD.

No. 9-52, ASHIHARA-CHO,
NISHINOMIYA-CITY, JAPAN

TELEPHONE : 0798-65-2111
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