MR-F55 / MR-F75

Marine Radio with Digital Selective Calling

OPERATOR MANUAL

***** Notice: this operator manual is not a final version and is subject to minor change if necessary**

02	03-01-03	Update	Danty Lin / Cobra	Giant: KW SIT
01	17-12-02	Update	Danty Lin / Cobra	Giant: KW SIT
00	09-12-02	Creation	Danty Lin / Cobra	Giant: KW SIT
ED	**DATE**	**CHANGE NOTE**	**APPRAISAL AUTHORITY**	**ORIGINATOR**

CHANGE HISTORY

ED	DATE	NATURE OF CHANGE	REASON FOR CHANGE
00	09-12-2002	Creation of Draft copy	Creation
01	17-12-2002	Update	Update according to limited display requested by customer requirement
02	03-01-2003	Update	Update due to customer changed features
03	30-04-2003	Update	Update due to changed features

Chapter CONTENTS **page**

1. Suggested Changes from Customer Original Request

- Volume Up/Down Keys on the Microphone is deleted for MR F55 only. The main unit of MR F75 uses different rotary switch to implement digital volume control.
- Menu-ALLSHIP Indicator and DSC-ALL-Ship-Signaling.
- GoundSpeed/CourseOverGround Indicator is deleted because we do not know how it should be used. Need more description from customer.
- SoundTracker Noise Reduction is canceled.
- Channel up/down and 16/9 keys on microphone is added to MR-F55.

2. Feature List (Software related items)

Channels

1. Marine VHF/FM: All US, Canadian & International Channels
2. 10 NOAA/Weather Channels

Other Major Features

1. 1 or 25 Watt Transmit
2. Weather Alert
3. Digital Selective Calling: RTCM SC-101
4. GPS NMEA 0183 Interface

Cabinet / Appearance Features

1. Backlit silicone buttons w/dark printed graphics

Convenience Features

1. Dual Watch: working channel, priority channel
2. Triple Watch: working channel, priority channel, weather alert (only for MR-F75)
3. LCD Display (with 3-Step backlighting, 7-step contrast)
4. Instant Channel 9 & 16
5. Normal Scan
6. Programmable scan (w/ or w/o priority scan on Channel 16) (only for MR-F75)

Switches/Controls on Radio

1. Power/Volume rotary control
2. Channel UP Key and Channel Down Key
3. Squelch Rotary Control
4. HI/LO Key
5. 16/9 Key
6. WX/UIC Key
7. SCAN Key (for MR-F55) or M SCAN Key (=SCAN Key) for MR-F75
8. CALL/SET Key (Functions as Enter)
9. DW (Dual Watch Key for MR-F55) or TRI W (Tri-Watch Key for MR-F75)
10. Distress Key

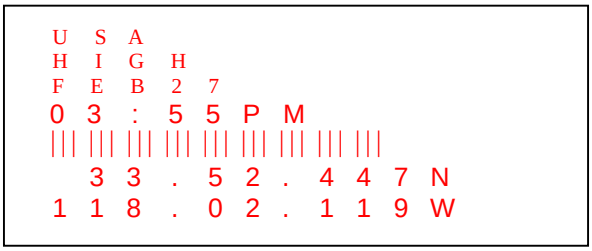
Switches/Controls on Microphone

1. PTT (Press-to-Talk)
2. Channel UP/Down Key
3. 16/9 Key
4. Volume Up and Down Key (for MR-F75 only)

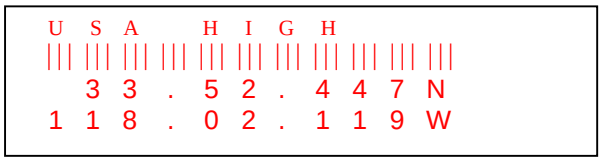
BackLit LCD Icons and Dot Matrix

1. Two digit 7-Segment Channel Indicators
2. U-I-C Indicator (US, International or Canadian)
3. WX Indicator and Weather Alert Indicators
4. "A" Indicator – Added by Giant
5. Hi-Lo Indicator
6. Tx Indicator
7. Memory Indicator
8. Longitude/Latitude Indicator
9. Time/Date Indicator
10. Setup Menu
11. For MR-F75,LCD has 7 lines.
12. For MR-F55,LCD has 4 lines.

MR-F75 LCD



MR-F55 LCD



3. Main Unit User Input Control

Key Definition in the Radio (for MR-F55 and MR-F75)

Power/Volume rotary control	Turn on/off power and control volume of speaker (analog volume control for MR-F55 but digital volume control and push-botton power on/off for MR-F75)
UP key	Press to increase the channel/Value step by step Hold to increase automatically
DOWN key	Press to decrease the channel/Value step by step Hold to decrease automatically
Squelch Rotary Control	Adjust the squelch level

HI/LO Key	Press to toggle High or Low transmit power
16/9 Key	A short press of the key will switch the radio to Channel 16 from the working channel. Press again (shortly) to toggle between Channel 9 and Channel 16. A long press of the key will switch back to the working channel.
WX/UIC Key	A short press of the key will switch the radio between Weather band and working band A long press of the key will select country (USA, INTL or CAN)
SCAN Key for MR-F55	Short Press to start Normal Scanning/return to its previos state
M SCAN Key (=Scan Key) for MR-F75	Short Press to enter memory scan mode / stop M SCAN mode and return the unit to its previous state. Long Press (>=3 seconds)to memorise or clear the scan channel memory (for MR-F75 only)
CALL/SET Key	Long Press(>3 seconds) to enter Setup Menu in Standby Short Press(<1 second) to enter DSC Menu in Standby
DW Key for MR-F55 (=Watch Key) TRI W Key for MR-F75 (=Watch Key)	Press to start Dual Watch for MR-F55 Press to start Tri-Watch for MR-F75
DSC distress Key	Press to Enter DISTRESS menu. From this menu, the user can push and hold the DSC distress button (>3 seconds) to send a DSC distress call or select the manual mode to enter coordinate information from the radio's front panel buttons.

Key Definition in the Microphone (for MR-F55 and MR-F75)

PTT Key	Press to transmit
MIC-UP Key	Increase the channel
MIC-DOWN Key	Decrease the channel
MIC-16/9 Key	A short press of the key will switch the radio to Channel 16 from the working channel. Press again (shortly) to toggle between Channel 9 and Channel 16. A long press of the key will switch back to the working channel.

Key Definition in the Microphone (only for MR-F75)

MIC-Volume-UP Key	Increase the Volume

MIC-Volume-DOWN Key	Decrease the Volume

Remarks:

1. A short press is defined as holding the key less than 1 second before release.

2. A long press is defined as holding the key more than 3 seconds before release.

4. Main Unit Display Output Control

LCD Display (for MR-F55 and MR-F75)

KeyPad Backlit	On if the keypad is pressed
CHANNEL Indicator (2 digits 7-segment)	Show the channel number
(UIC) USA Indicator	Show US Channels are selected
(UIC) INTL Indicator	Show International Channels are selected
(UIC) CAN Indicator	Show Canadian Channels are selected
WX Indicator	Show Weather Band is selected
Weather Alert Indicator	Show the weather alert has been detected
Hi-Lo Indicator	Show High transmit power is selected
"A" Indicator	Show in the simplex channel in US or Canadian mode whose counterpart in international mode is a duplex channel
TX Indicator	Show the unit is transmitting.
Memory Indicator	Show in the memory state
10 Bar Signal Strength Meter	Show the Signal Strength transmitted or received
Longitude/Latitude Indicator (Added by Giant)	Show position information from GPS receiver
Time/Date Indicator (Added by Giant)	Show current date and time
Menu-CONTRAST Indicator	Show in the Lcd Contrast programming mode
Menu-KEY TONE Indicator	Show in the Key beep programming mode
Menu-SET TIME Indicator	Show in the Time Offset programming mode
Menu-PA MODE Indicator	Shoe in the PA MODE programming mode
Menu-NAME Indicator	Show in the Individual directory programming mode
Menu-POS RPLY Indicator	Show in the Position Request Reply Type programming mode

Menu-USER MMSI Indicator	Show in the USER MMSI Entry programming mode
Menu-ALLSHIP Indicator	Show in the ALLSHIP programming mode

5. Main Unit Alert Tone Output Control

1. Confirmation Key Tone (70 dB): Sounded when the user presses a valid button.

   (F=900Hz, Duration=50ms)

   Notice: This key tone can be programmed ON/OFF in MR-F75

2. Error Key Tone (70 dB): Sounded when the user presses an invalid button

   (F=300Hz, Duration=50ms)
   (F= 0Hz, Duration=50ms)
   (F=300Hz, Duration=50ms)
   (F= 0Hz, Duration=50ms)

3. WX Alarm (80 dB): Sounded Continuously when the radio detects weather alert

   (F=3000Hz, Duration=500ms)
   (F= 0Hz, Duration=500ms)

4. DSC Alarm 1 (90 dB): Sounded Continuously when a DSC distress call is sent or when a DSC distress relay call or a All Ship call is received.

   (F=1000Hz, Duration=200ms)
   (F= 0Hz, Duration=100ms)
   (F=1000Hz, Duration=200ms)
   (F= 0Hz, Duration=100ms)
   (F=1000Hz, Duration=200ms)
   (F= 0Hz, Duration=400ms)

5. DSC Alarm 2 (90 dB): Active during a Geographical Call.

   (F= 800Hz, Duration=500ms)
   (F= 400Hz, Duration=500ms)
   (F= 0Hz, Duration=200ms)

6. DSC Alarm 3 (80 dB): Active for Individual Call received.

   (F= 800Hz, Duration=50ms)
   (F= 0Hz, Duration=50ms)
   (F= 800Hz, Duration=50ms)
   (F= 0Hz, Duration=350ms)

7. DSC Alarm 4 (80 dB): Active for Position Request Call received.

(F=1000Hz, Duration=100ms)

(F= 0Hz, Duration=50ms)

(F=1000Hz, Duration=100ms)

(F= 0Hz, Duration=50ms)

(F=1000Hz, Duration=100ms)

(F= 0Hz, Duration=50ms)

(F=1000Hz, Duration=250ms)

(F= 0Hz, Duration=250ms)

6. Signaling protocols

1) NMEA 0183 Version (1.5 to 2.3) Input Sentences:
GLL – Geographic Position–Longitude/Latitude
RMC – Recommended Minimum Specific GNSS Data
2) NMEA 0183 Version (2.3) Output Sentences:
DSC – Digital Selective Calling Information
DSE – Expanded Digital Selective Calling Information

7. BackLit KeyPad

When the keypads are pressed, the backlit lamps under the keypad is turned on for 10 seconds. If no keys are pressed, it turns off. If new keys are pressed, the timeout is resumed.

8. Channel Information Display

The Channel Information display consists of several parts, which depends on channel selected.

1) Two digits 7-segment display: Shows the channel number from channel 01 to 88.

2) USA, INT, CAN Indicators: Show the country selected for the channel. USA implies USA. INT implies international. CAN implies Canada.

3) WX Indicator: Show the channel selected is in weather band

4) HIGH Indicator: Show the channel selected using high power for transmission

5) MEM Indicator: Show the channel has been memorized for memory scan.

6) “A” Indicator: Show the alternative channel selected for the channel.

9. TX Indicator

The Indicator is sold ON when the radio is transmitting

10. Signal Strength Indicator

For MR-F55:

The indicator consists of 11 bars to indicate the signal strength received.

For MR-F75:

The indicator consists of 9 bars to indicate the signal strength received.

11. Basic Operation

Power Up Standby

1. After the transceiver has been installed, ensure that the power supply and antenna are properly connected.
2. Press and Hold the **VOL/PWR** knob until the radio turns on.
3. Turn the **SQL** knob fully counterclockwise. This state is known as “squelch off”.
4. Turn up the volume until noise or audio from the speaker is at a comfortable level.
5. Turn the **SQL** knob clockwise until the random noise disappears. This state is known as the “squelch threshold.” Note: further adjustment of the squelch control will degrade reception of wanted transmissions.
6. The display shows the Current “Channel Information”.
7. Press the **UP** or **DOWN** key to select the desired channel. Refer to the channel chart in the Section “Channel Assignments” for available channels.
8. Press 16/9 Key to change to 16, 9 or current channel
9. Press WX/UIC Key to change to weather or current channel
10. Press SCAN or M SCAN Key to access scanning
11. Press DW or TRI W Key to access Dual or Triple Watch
12. Press PTT Key to start transmission
13. Press CALL/SET Key to access MENU
14. Press HI/LO Key to toggle between High and Low transmit power.

RECEPTION

1. Assume in Power Up Standby
2. When a message is received, the speaker is turned on automatically.
3. The display shows the current “Channel information”.
4. Adjust the volume to the desired listening level by rotating the Volume switch
5. Press the UP or Down Key to select the desired channel.
6. Press 16/9 Key to change to 16, 9 or current channel
7. Press WX/UIC Key to change to weather or current channel
8. Press SCAN or M SCAN Key to access scanning
9. Press DW or TRI W to access Dual or Triple Watch
10. Press PTT Key to start transmission
11. Press CALL/SET Key or HI/LO Key, no response
12. When the signal is absent more than 1 second, the radio returns to Power Up Standby.

TRANSMISSION

1. Assume in Power Up Standby, or Reception
2. Before transmitting, monitor the channel to ensure it is clear. THIS IS FCC REQUIREMENT!
3. Press the **PTT** (push-to-talk) switch.
4. The display shows the current “Channel Information”. The TX indicator on the LCD is displayed continuously to indicate transmission.
5. Speak slowly and clearly into the microphone.
6. No response for all keys, except HI/LO Key
7. When the transmission is finished, release the **PTT** switch. Then the radio returns to Power up standby immediately.
8. **For MR-F75.** This is a noise-canceling microphone. The oval slot on the top of microphone should be positioned within 1 inch (2 cm) from the mouth for optimum performance.
9. Refer to the Section “Operating Practices” for standard transceiver operating procedures.

TRANSMIT TIME - OUT TIMER (TOT)

1. When the **PTT** switch on the microphone is held down, transmit time is limited to 5 minutes. This prevents unintentional transmissions.
2. About 10 seconds before automatic transmitter shutdown, a warning beep will be heard from the speaker(s).
3. The transceiver will automatically go to receive mode, even if the **PTT** switch is continually held down. Before transmitting again, the **PTT** switch must first be released and then pressed again.

High/Low Key

1. Assume during transmission
2. This key toggles between high and low power. The **High/Low** key does not function on transmit inhibited and low power only channels.
3. When the **High/Low** key is pressed, the transmission power will temporarily switch from Low to High power until the **PTT** is released when the current transmission is low power. Or the transmission power will revert to low power if the current transmission is high power.
4. The High Power is 25W. The Low Power is 1W.
5. In Power Up Standby, all channels are default to Low Power.

16/9 Key

1. Assume in Power Up Standby, or Reception
2. Press 16/9 Key, immediately recall channel 16 from any channel location.
3. Pressing the **16/9** key again toggle between channel 9 and channel 16.
4. A long press of this key recalls the working channel
5. When the 16/9 Key is being held, no response to all keys
6. However, when the signal is received, the speaker turns on. Then go to reception.
7. The display shows the updated “Channel Information”.

SIMPLEX/DUPLEX CHANNEL USE

1. Refer to the Section “Channel Assignments” for instructions on use of simplex and duplex channels.
2. **NOTE:** All channels are factory-programmed in accordance with FCC (USA), Industry Canada (Canada), and International regulations. Mode of operation cannot be altered from simplex to duplex or vice-versa.

USA, CANADA, INTERNATIONAL and PA MODE

1. Assume in Power Up Standby, or Reception
2. To change the modes, hold the **WX/UIC** key to enter the country change mode.
3. When the WX/UIC key is being held, no response to all keys.
4. However, when the signal is received, the speaker will turn on. Then go to reception.
5. The Channel shows the changed weather/CB channel after the WX-U/I/C-PA Key is pressed. Then it shows Channel 16 after WX-U/I/C-PA is confirmed hold. The UIC-U turns on for USA mode, UIC-I turns on for International mode, and UIC-C turns on for Canadian mode. PA turns on if PA is enabled.
6. Release the key. Press UP or Down Key to change the country mode. The mode changes from USA to International to Canadian to PA with each press of the **UP** key. The order is reversed if **DOWN** key is pressed.
7. Refer to the Section “Channel Assignments” for allocated channels in each mode.

NOAA WEATHER CHANNELS

1. Assume in Power Up Standby, or Reception
2. To receive a NOAA weather channel, press the **WX-U/I/C-PA** key from any channel. The transceiver will go to the last selected weather channel if current channel is not weather band channel. Otherwise, the transceiver returns to the channel it was on prior to weather channel.
3. The display shows the updated “Channel Information”. The WX Indicator turns on if it is in weather band. Otherwise, it turns off.

4. It goes to Power Up Standby.

NOAA WEATHER ALERT

In the event of extreme weather disturbances, such as storms and hurricanes, the NOAA (National Oceanic and Atmospheric Administration) sends a weather alert accompanied by a 1050 Hz tone and subsequent weather report on one of the NOAA weather channels. The transceiver is capable of receiving this alert if the following is performed:

1. For MR-F75: Program NOAA weather channels into the transceiver's memory for scanning. Follow the same procedure as for regular channels.
2. For MR-F75: Press the **SCAN** key once to start memory scanning or hold down the **SCAN** key during memory scanning to start priority scanning.
3. For MR-F55 or For MR-F75 without programmed scan channels: Hold down the SCAN Key during normal scanning to start additional weather band channels.
4. [The programmed—for MR-F75 with programmed scan channel, ALL – for otherwise] NOAA weather channels will be scanned along with [the regular-programmed channels – for MR-F75 with programmed scan channel, ALL channels – for otherwise]. However, scanning will not stop on a normal weather broadcast unless a NOAA alert is received.
5. When an alert is received on a NOAA weather channel, scanning will stop and the transceiver will emit Weather Alert tone to alert the user of a NOAA broadcast.
6. The display shows the current "Channel Information". The TX Indicator turns off to indicate that the channel is being used. The Weather Alert Indicator turns on.
7. Press the UP or Down key to start scanning again with Weather Alert sound and indicators turn off.
8. Press the **WX-U/I/C-PA** key to stop the alert tone/indicator and receive the weather report.
9. Press 16/9 Key, Scan Key, or PTT Key, no response
10. **NOTE:** If the **WX-U/I/C-PA** key is not pressed the alert tone will be emitted for 5 minutes and then stop alert tone/indicator and the weather report will be received
11. If the signal is absent more than 1 second, the radio starts scanning again.

NORMAL SCANNING with/without weather band scanning (N-SCAN)

1. Assume in Power Up Standby, or Reception
2. Adjust the **SQL** knob until background noise disappears.
3. To start scanning, press the **SCAN** key. Scanning will proceed from the lowest to the highest channel number and will stop on a channel when a transmission is received.
4. The display shows the current "Channel Information". The Tx Indicator turns off. The received channel number will blink during busy stop.
5. Press the UP or Down Key to start scanning again.
6. Press and Hold SCAN key to start scanning from Weather band 1 to 10, then normal channels. That is, weather band scanning is added. No response to other keys if the SCAN key is kept pressing.
7. To stop scanning, press the **SCAN**, **16/9**, **WX-U/I/C-PA**, or **PTT** key. Then return to Standby.

MEMORY SCANNING (M-SCAN) – for MR-F75 only

1. Assume scan channels has been programmed. Otherwise, it does Normal Scanning
2. Assume in Power Up Standby, or Reception
3. Adjust the **SQL** knob until background noise disappears.
4. Select a desired channel to be scanned using the **UP** or **DOWN** key. Press and hold the **SCAN** key, MEM Indicator turns on, which programs the channel into the transceiver memory.
5. Repeat above step for all the desired channels to be scanned.
6. To DELETE a channel from the transceiver's memory, press and hold the **SCAN** key, MEM will disappear.
7. To start scanning, press the **SCAN** key. Scanning will proceed from the lowest to the highest programmed channel number and will stop on a channel when a transmission is received.
8. The display shows the current "Channel Information". The Tx Indicator turns off. The MEM indicators turns on. The received channel number will blink during busy stop.
9. Press the UP or Down Key to start scanning again
10. To stop scanning, press the **SCAN**, **16/9**, **WX-U/I/C-PA**, or **PTT** key. Then return to Standby.

Dual(for MR-F55)/Triple(for MR-F75 only) Watch

1. Assume in Power Up Standby, or Reception
2. Adjust the **SQL** knob until background noise disappears.

3. For MR-F55, press the **WATCH** key to start dual watch. For MR-F75, press and release the **WATCH** key to start tri-watch. No further response if the **WATCH** key is kept pressed
4. Dual Watch monitor working Channel, and 16 Channel. Tri-Watch monitors working channel, 16 channel, and 9 channel.
5. The display shows the current "Channel Information". The Tx Indicator turns off. The received channel number will blink during busy stop.
6. Press the UP or Down Key to start watching again.
7. To stop watching, press the **SCAN**, **16/9**, **WX-U/I/C-PA**, or **PTT** key. Then return to Standby.

SOUND TRACKER NOISE REDUCTION (for MR-F75 only)

The transceiver has the ability to reduce the noise by sound tracker noise reduction circuitry.
The Sound Tracker circuitry is always ON.

RESETTING THE TRANSCEIVER'S MICROPROCESSOR

Resetting the microprocessor restores the initial, factory supplied conditions in the transceiver. These are called the default conditions.

1. To reset the microprocessor, first turn the transceiver off.
2. Then while pressing the **WX-U/I/C-PA** and **SCAN** keys, turn the transceiver on.
3. The default conditions are:

• No channels in SCAN memory.
• Channel 16 will be selected when the transceiver is turned on.
• WX channel 01 will be recalled when the **WX-U/I/C-PA** key is pressed.
• Key beep will be on.

4. **NOTE:** Resetting the microprocessor will not erase DSC MMSI and Directory Call Waiting information.

12. RADIO SETUP MODE

SETUP

1. Press and hold down the **CALL/SET** key until the Menu Indicator blinks.
2. To select the items, press the **UP** or **DOWN** key.
3. When Down is pressed, the menu indicator to be blinked is changed in the following order: Menu-LAMP -> Menu-CONSTRAST -> Menu-INVID -> Menu-KEY -> Menu-TIME -> Menu-DSC. When Up key is pressed, the order is reversed.
4. Press 16/9 Key, WX-U/I/C-PA Key, Scan Key, and PTT Key to exit to Standby

LAMP ADJUSTING

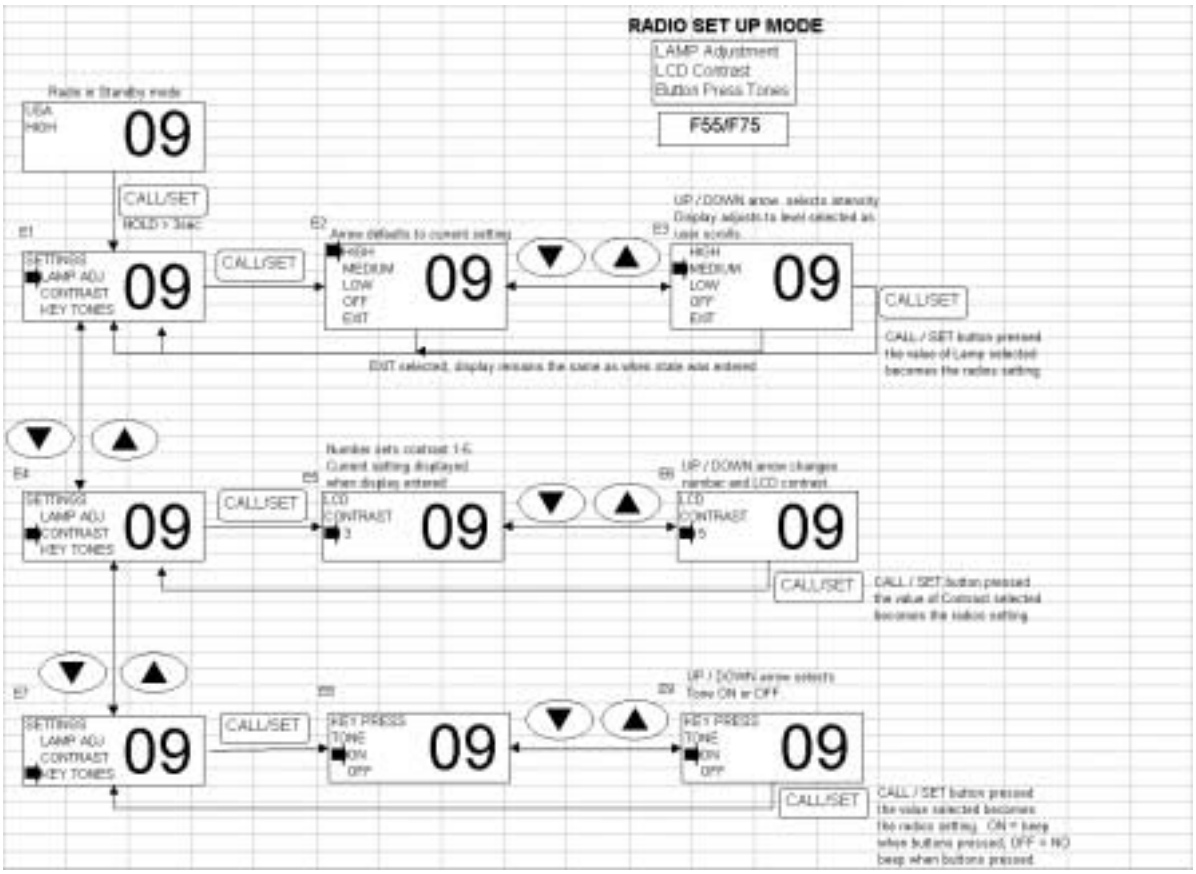
1. Assume in Setup Mode
2. Select Menu-LAMP with the **UP** or **DOWN** key.
3. Press the **CALL/SET** key.
4. The Menu-LAMP indicator turns ON. The lamp brightness value (00 to 03) is then shown on the 2 digits.
5. Press the **UP** or **DOWN** key to select the desired level. When 00 is selected, there is no back-light. When 03 is selected, the back-light is highest.
6. Press the **CALL/SET** key to store the selected level.
7. Press 16/9 Key, WX-U/I/C-PA Key, Scan Key, and PTT Key to exit to Standby
8. The LCD will return to the SETUP menu with Menu-LAMP indicator blinking.

LCD CONTRAST

1. Assume in Setup Mode
2. Select Menu-CONSTRAST with the **UP** or **DOWN** key.
3. Press the **CALL/SET** key.
4. The Menu-CONSTAST indicator turns ON. The lamp Contrast value (00 to 07) is then shown on the 2 digits.
5. Press the **UP** or **DOWN** key to select the desired level. When 00 is selected, the contrast is lowest. When 07 is selected, the contrast is highest.
6. Press the **CALL/SET** key to store the selected level.
7. Press 16/9 Key, WX-U/I/C-PA Key, Scan Key, and PTT Key to exit to Standby
8. The LCD will return to the SETUP menu with Menu-CONTRAST indicator blinking.

KEY BEEP (ON OR OFF)

1. Assume in Setup Mode.
2. Select Menu-KEY with the **UP** or **DOWN** key.
3. Press the **CALL/SET** key.
4. The Menu-KEY indicator turns ON. The key value (on or oF) is then shown on the 2 digits.
5. Press the **UP** or **DOWN** key to select the desired level. When on is selected, the key tone is on. When oF is selected, the key tone is off.
6. Press the **CALL/SET** key to store the selected level.
7. Press 16/9 Key, WX-U/I/C-PA Key, Scan Key, and PTT Key to exit to Standby
8. The LCD will return to the SETUP menu with Menu-KEY indicator blinking.
9. **NOTE:** Emergency alarm and beeps for DSC operation cannot be turned OFF.



13. DIGITAL SELECTIVE CALLING

GENERAL

Digital Selective Calling (DSC)

Digital Selective Calling is a semi-automated method of establishing a radio call, it has been designated by the International Maritime Organization (IMO) as an international standard for establishing VHF, MF and HF radio calls. It had also been designated as part of the Global Maritime Distress and Safety System (GMDSS). It is planned that DSC will eventually replace aural watches on distress frequencies and will be used to announce routine and urgent maritime safety information broadcasts.
This new system will allow mariners to instantly send a distress call with GPS position (when connected to the transceiver) to the US Coast Guard and other vessels within range of the transmission. DSC will also allow mariners to initiate or receive distress, urgency, safety routine, POS Request, POS Send and Group calls to or from another vessel equipped with a DSC transceiver.

Maritime Mobile Service Identity (MMSI)

What is an MMSI?
An MMSI is a nine digit number used on Marine Transceiver capable of using Digital Selective Calling (DSC). This number is used like a telephone number to selectively call other vessels. Refer to section "USER MMSI INPUT"

How can I obtain a MMSI assignment?
Contact your dealer for details.

WARNING
This radio is designed to generate a digital maritime distress and safety call to facilitate search and rescue. To be effective as a safety device, this equipment must be used only within communication range of a shore-based VHF marine channel 70 distress and safety watch system. The range of signal may vary but under normal conditions should be approximately 20 nautical miles.

DSC SCANNING

The radio can receive several type of DSC transmission if DSC Scanning is enabled.
1. When a DSC call is received the radio will only show Channel 70 on the display if the call was directed to the radios MMSI or if it is a Distress or All ships DSC call.
2. A Emergency Tone sounds.
3. Press any key to switch automatically to stop the Alarm.
4. Channel 16 is automatically selected.

When the radio is shipped from the factory it is programmed so CH70 (the DSC channel) is scanned at all times. A selection has been added to the SETUP MENU in the radio to disable the DSC SCAN. However, turning off DSC SCAN will disable the radio from receiving DSC calls i.e.: Individual Call, All Ships Call, Distress Call and Position Requests. If you want to use any of the functions the selection should be left ON.

SENDING A DISTRESS CALL

The distress call automatically includes the vessel's DSC MMSI and Lat/Lon position. Refer to section "USER MMSI INPUT". The vessel's position can be sent only if the transceiver is properly connected to an operating GPS receiver.

1. Assume the GPS receiver with NMEA output is connected.
2. Lift the red Spring loaded DISTRESS Cover.
3. Press and Hold the **DISTRESS** key for Three Second. The holding time will be displayed from 03 to 00.
4. If the GPS device is ready, the radio enters the DSC mode automatically. Otherwise, it sounds a Bad Key Tone and returns to Standby.
5. The DSC Indicators turns on. The Channel Indicator shows Channel 70. The Hi/Lo and Tx Indicators turn on.
6. The radio sends the distress Call signal.
7. After the message has been sent, the Hi-Lo and Tx Indicators turn off. The radio monitors Channel 70 for Distress Acknowledge and Channel 16 for emergency traffic. The Channel Indicators display 70 or 16 accordingly.

8. If no acknowledgment is received, the distress call is repeated distress signal transmission again in 4 minute intervals until an acknowledgment is received.
9. To cancel a Distress Call, press the **16/9**, **UP** or **DOWN, WX-U/I/C-PA, SCAN, or PTT** key. Then return to Standby.
10. When a distress acknowledgment is received, a Good Key Tone sounds and channel 16 is automatically selected. Then return to Standby.

DSC MENU FOR SENDING

1. For MR-F55,A short press of the CALL/SET button (<1 second) from standby mode will cause the unit to enter the DSC menu where the user can select from the following using the UP and DOWN buttons:

First Page	Second page
INDIVIDUAL	↑BACK↑
GROUP	POS REQST
ALL SHIPS	POS SEND
↓MORE↓	EXIT

1) The cursor starts on the word "INDIVIDUAL"

2) The down channel button would set cursor down one line each press.

3) If down button is pressed on "ALL SHIPS" then go to second page and sets cursor to "POS REQST" (do not set cursor on "more" line)

4) If up channel button pressed from "POS REQST" then return to first page with cursor on "ALL SHIPS" (do not set cursor on back line)

2. for MR-F75:A short press of the CALL/SET button (<1 second) from standby mode will cause the unit to enter the DSC menu where the user can select from the following using the UP and DOWN buttons.

First Page	Second page
INDIV	↑BACK↑
GROUP	POS SEND
ALL SHIPS	EXIT
STANDBY	
CALL WAIT	
POS REQST	
↓MORE↓	

SENDING AN INDIVIDUAL CALL

This feature allows the user to contact another user vessel DSC and to automatically switch the receiving DSC radio to a desired working channel. This feature is similar to calling a vessel on CH16 and requesting to go to a another channel. To send an individual call, see section "INDIVIDUAL DIRECTORY SETUP". The individual call function allows you to transmit a DSC signal to a specific party only, prompting communication on a voice channel.

1. Assume in Power Up Standby, or Reception
2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select the Individual Call by pressing UP/Down Key several time, point to INDIV(INDIVIDUAL for MR-55) indicators .
4. Press the **CALL/SET** key to transmit the individual DSC signal.
5. The Channel Indicator shows Channel 70. The Hi-Lo, Tx, and Lamp-Invid Indicators turn on.
6. After INDIVIDUAL CALL is transmitted, the transceiver will wait 8 seconds for the acknowledgment. The Hi-Lo, and Tx Indicator turn off. If the reply signal is not received, the transceiver will transmit again. Hi-Lo and Tx Indicators turn on again.
7. After the second INDIVIDUAL CALL is transmitted, if the reply signal is not received, the Hi-Lo, and Tx Indicators turns off. The Lamp-Invid indicator start blinking. User can press CALL/SET Key again to transmit the signal again. Otherwise, press any other key to exit the mode to Standby.
8. When an individual call acknowledgment "able to comply" is received, the established channel is automatically selected and a Good Key tone sounds.
9. When an individual call acknowledgment with "unable to comply" is received, the established channel is automatically selected without key sound.

11. To cancel, press the **16/9**, **UP** or **DOWN, WX-U/I/C-PA, SCAN, or PTT** key. Then return to Standby.

SENDING AN ALL SHIPS CALL

This call sends out a message to all ship's that, for instance, you may have a situation on board that is not serious enough for a Distress Call but you might need some assistance. This call should only be used if hailing for assistance on channel 9 or 16 fails. This type of call is limited to 1 Watt (by regulation) so the range is limited. When an All Ship's Call is sent or received, the radio will then automatically select channel 16.

1. Assume in Power Up Standby, or Reception
2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select the all ships Call by pressing UP/Down Key several time, point to ALLSHIP indicators .
4. Press the **CALL/SET** key to transmit the all Ship DSC signal.
5. The Channel Indicator shows Channel 70. The Hi-Lo, Tx, and Lamp-Allship Indicators turn on.
6. After ALLSHIP CALL is transmitted, the radio will switch to Channel 16. The Hi-Lo, Tx, Lamp-AllShip Indicators turn off. Then return to Standby.

SENDING AN GROUP CALL

1. Assume in Power Up Standby, or Reception
2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select thegroup Call by pressing UP/Down Key several time, point to group indicators .
4. Press the **CALL/SET** key to transmit the group DSC signal.
5. The Channel Indicator shows Channel 70. The Hi-Lo, Tx, and Lamp-Allship Indicators turn on.
6. After group call is transmitted, The Hi-Lo, Tx, Lamp-GROUP Indicators turn off. Then return to Standby.

SENDING AN POSITION REQUEST

1. Assume in Power Up Standby, or Reception
2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select thegroup Call by pressing UP/Down Key several time, point to POS REQST indicators .
4. Press the **CALL/SET** key to transmit the POS REQST signal.
5. The Channel Indicator shows Channel 70. The Hi-Lo, Tx, and Lamp-Allship Indicators turn on.
6. After POS REQST is transmitted, The Hi-Lo, Tx, Lamp-POS REQST Indicators turn off. Then return to Standby.

SENDING AN POSITION SEND

1. Assume in Power Up Standby, or Reception

2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select thegroup Call by pressing UP/Down Key several time, point to POS SEND indicators .
4. Press the **CALL/SET** key to transmit the POS SEND signal.
5. The Channel Indicator shows Channel 70. The Hi-Lo, Tx, and Lamp-Allship Indicators turn on.
6. After POS SEND is transmitted, The Hi-Lo, Tx, Lamp-POS SEND Indicators turn off. Then return to Standby.

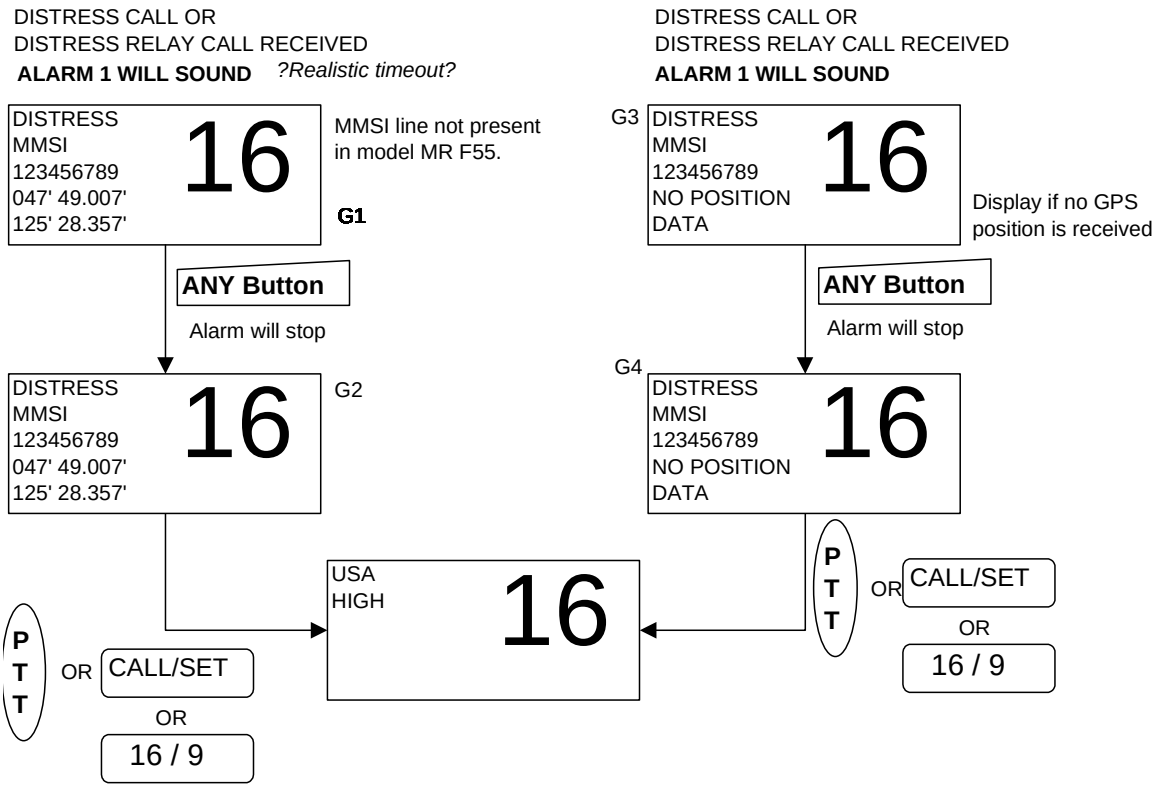
SENDING AN CALL WAITING (ONLY FOR F75)

1. Assume in Power Up Standby, or Reception
2. Press and release the **CALL/SET** key ~~until the DSC Indicators blinks~~.
3. To select thegroup Call by pressing UP/Down Key several time, point to CALL WAIT indicators .
4. Press the **CALL/SET** key to transmit the CALL WAIT signal.
5. The Channel Indicator shows Channel 9. The Hi-Lo, Tx, and Lamp-CALL WAIT Indicators turn on.
6. After CALL WAIT is transmitted, The Hi-Lo, Tx, Lamp-CALL WAIT Indicators turn off. Then return to Standby.

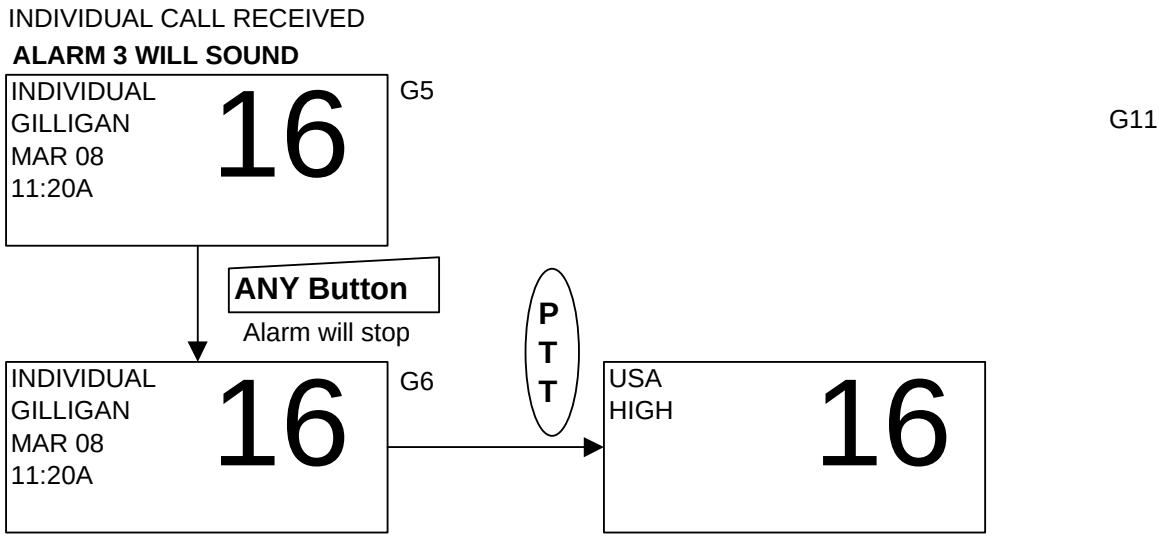
~~SENDING AN STANDBY CALL (ONLY FOR F75)~~

~~1. Assume in Power Up Standby, or Reception~~
~~2. Press and release the **CALL/SET** key until the DSC Indicators blinks.~~
~~3. To select thegroup Call by pressing UP/Down Key several time, point to STANDBY indicators .~~
~~4. Press the **CALL/SET** key to transmit the STANDBY signal.~~
~~5. The Channel Indicator shows Channel 9. The Hi-Lo, Tx, and Lamp-STANBY Indicators turn on.~~
~~6. After STANDBY is transmitted. The Hi-Lo, Tx, Lamp-STANDBY Indicators turn off. Then return to Standby.~~

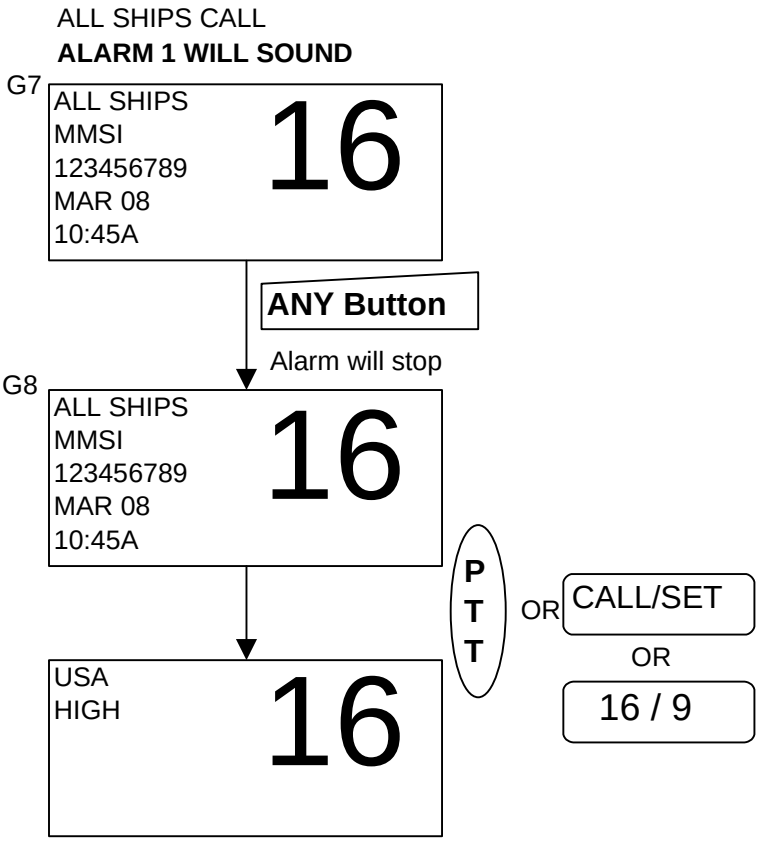
RECEIVING DISTRESS CALL



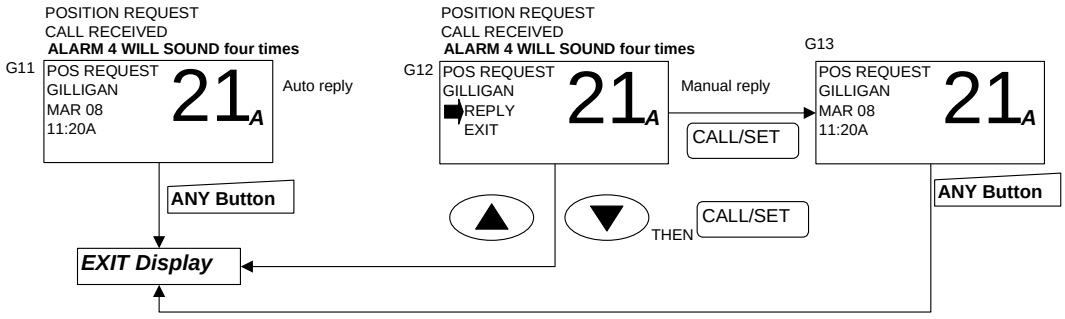
RECEIVING INDIVIDUAL CALL



RECEIVING ALL SHIPS CALL



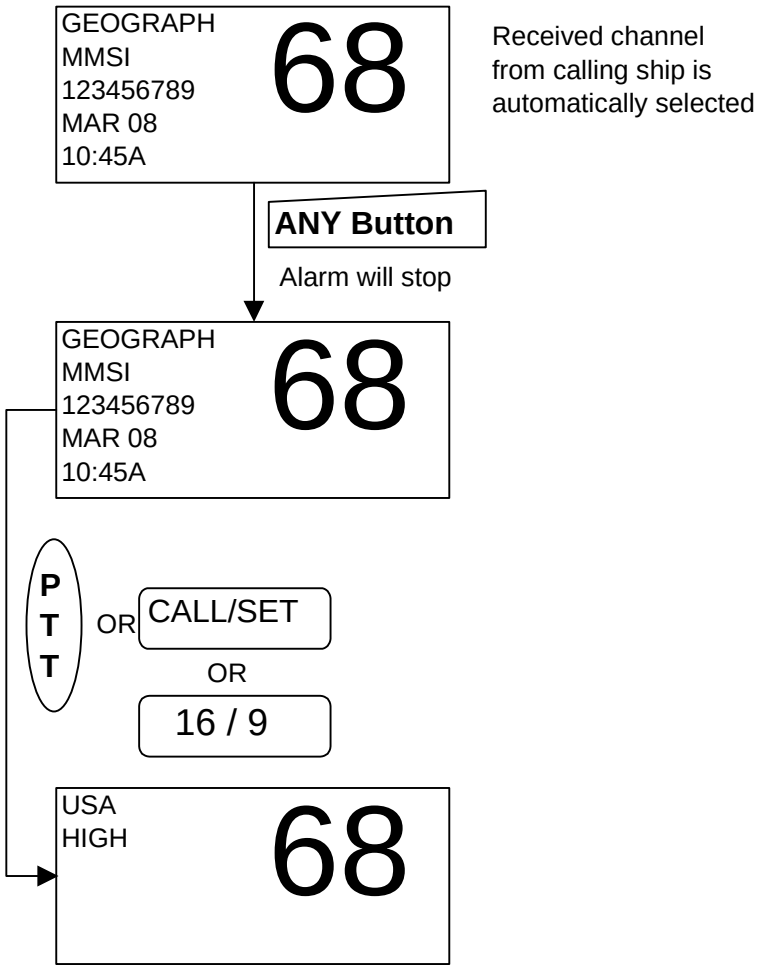
RECEIVING POSITION REQUEST CALL



RECEIVING GEOGRAPHICALL CALL

GEOGRAPHICAL CALL

ALARM 2 WILL SOUND



RECEIVING GROUP CALL

LCD display For MR F55 :

GROUP
123456789
MAR 08
10:45AM

LCD display For MR F75:

GROUP
MMSI
123456789
MAR 08
10:45AM

14. DSC SETUP MODE

CHANGE DSC SCANNING

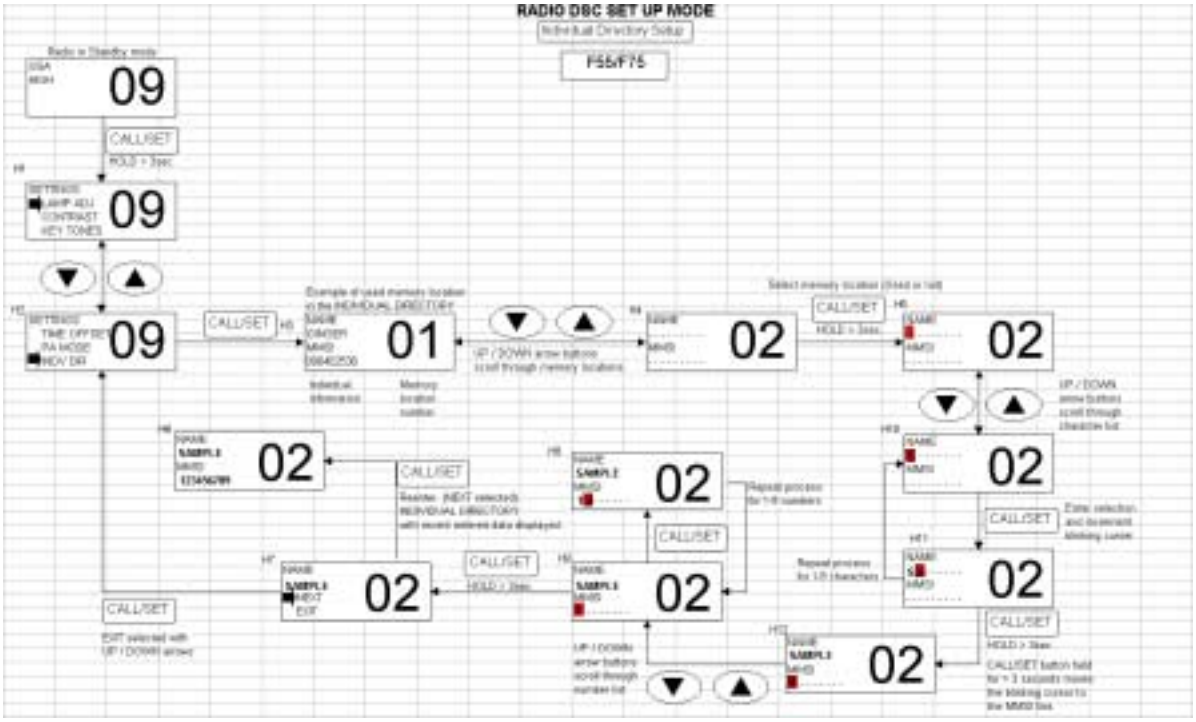
3. Assume in Setup Mode which is entered by holding Call/Set Key
4. Select Menu-DSC with the **UP** or **DOWN** key.
5. Press and hold the **CALL/SET** key.
6. The Channel Indicators shows on or oF according to the setup. The DSC scan is enabled, it shows on. Otherwise, it shows oF.
7. Press the **UP** or **DOWN** key to select ON or OFF.
8. Press and Hold **CALL/SET** key to confirm the setup. And return to Standby.

USER MMSI INPUT

1. Assume in Setup Mode which is entered by holding Call/Set Key
2. Select Menu-DSC with the **UP** or **DOWN** key.
3. Press and release the **CALL/SET** key.
4. First digit shows a fixed digit 1. Second digit shows the first digit of MMSI in blinking.
5. Press the UP or Down Key to change the value of the digit.
6. Press **CALL/SET** key to confirm the digits. The first digit increments. Second digit shows the n digit, indicated by the first digit, of MMSI. Second digit is blinking.
7. Repeat until 9-th digits of MMSI has been programmed. Press **CALL/SET** key again to go back to first digit
8. Press and Hold **CALL/SET** key to confirm the entrance. And return to standby.

INDIVIDUAL CALL SETUP

1. Assume in Setup Mode which is entered by holding Call/Set Key
2. Select Menu-INVID with the **UP** or **DOWN** key.
3. Press the **CALL/SET** key.
4. First digit shows a fixed digit 1. Second digit shows the first digit of Other Ship's MMSI in blinking.
5. Press the UP or Down Key to change the value of the digit.
6. Press **CALL/SET** key to confirm the digits. The first digit increments. Second digit shows the n digit, indicated by the first digit, of MMSI. Second digit is blinking.
7. Repeat until 9-th digits of MMSI has been programmed. Press **CALL/SET** key again to go back to first digit
8. Press and Hold **CALL/SET** key to confirm the entrance.
9. Then both digits blinks. The previously set Individual channel is shown.
10. Press UP or Down key to change the value of the Channel
11. Press and Hold **CALL/SET** key to confirm the entrance. Then it returns to Standby.



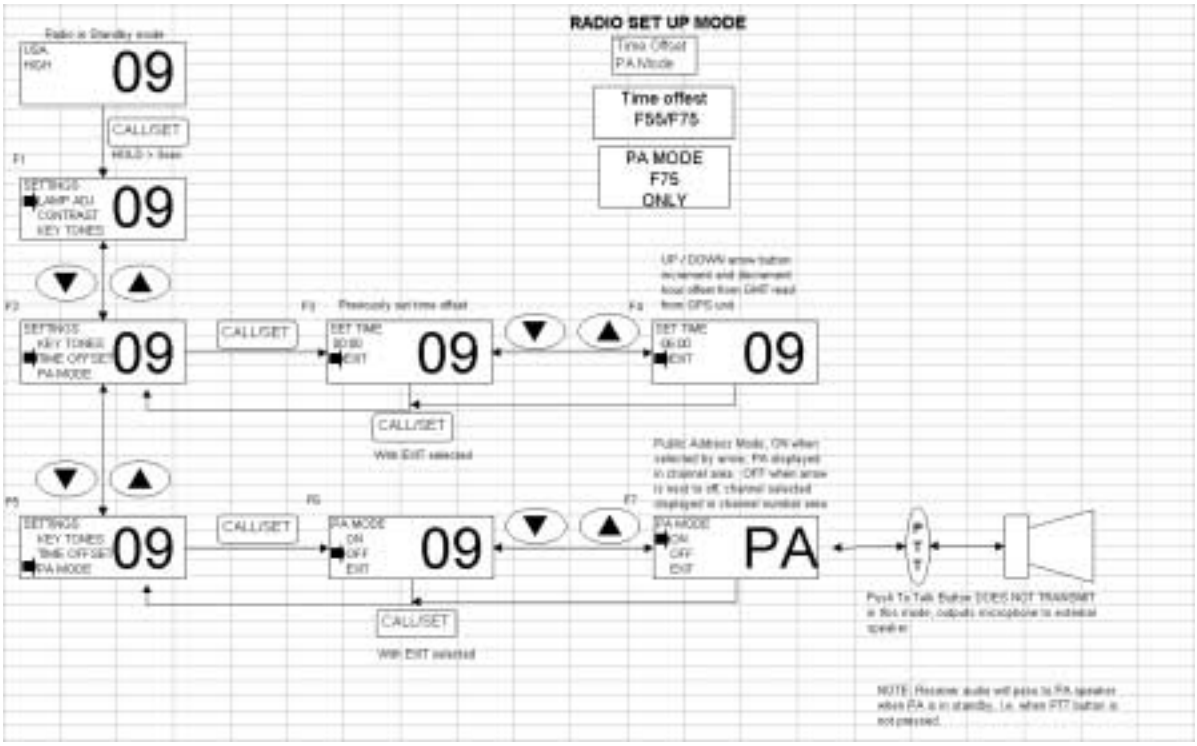
PA MODE

1. Assume in Setup Mode which is entered by holding Call/Set Key
2. Select Menu-TIME with the **UP** or **DOWN** key.
3. Press the **CALL/SET** key.
4. Press the UP or Down Key to select PA MODE.
5. Press the **CALL/SET** key select ON/OFF.
6. ~~Press and Hold **CALL/SET** key to confirm the entrance. It returns to Standby.~~

TIME OFFSET

Sets the time difference between local time and UTC(Universal Time Coordinated) or GMT(Greenwich Mean Time). Time is sent with GPS position.

7. Assume in Setup Mode which is entered by holding Call/Set Key
8. Select Menu-TIME with the **UP** or **DOWN** key.
9. Press the **CALL/SET** key.
10. Press the UP or Down Key to select the time offset from UTC. The range is from –12 hours to +12 hours.
11. Press and Hold **CALL/SET** key to confirm the entrance. It returns to Standby.



15. MIC OPERATION

As the external Mic is connected to the remote microphone connector on the transceiver's rear panel, then the transceiver can use the remote control operation except for a few functions. The External Mic has a maximum range of 50 feet (15 m) with the use of two 10-foot extension cables.

PTT (Push-To-Talk) SWITCH
Activates transmission.

DOWN KEY ~~(for MR-F75 Only)~~

- Same Function as the Down Key of main unit. If key is pressed in main unit, the microphone key, except PTT, will be ignored.
- Selects the desired channel. Each press decreases the channel number. When held down, the channels decrease continuously.

UP KEY ~~(for MR-F75 Only)~~

- Same Function as the UP Key of main unit. If key is pressed in main unit, the microphone key, except PTT, will be ignored.
- Selects the desired channel. Each press increases the channel number. When held down, the channels increase continuously.

CH16/9 KEY ~~(for MR-F75 Only)~~

- Same Function as the Ch16/9 Key of main unit. If key is pressed in main unit, the microphone key, except PTT, will be ignored.
- Selects the channel 16 or 9.

EMERGENCY (CHANNEL 16 USE)

Channel 16 is known as the **Hail and Distress Channel**. An emergency may be defined as a threat to life or property. In such instances, be sure the transceiver is on and set to CHANNEL 16. Then use the following procedure:

1. Press the microphone push-to-talk switch and say "**Mayday, Mayday, Mayday.** This is _____,_____ ,_____ " (your vessel's name).
2. Then repeat once: " **Mayday**,_____ ," (your vessel's name).
3. Now report your position in latitude/longitude, or by giving a true or magnetic bearing (state which) to a well-known landmark such as a navigation aid or geographic feature such as an island or harbor entry.
4. Explain the nature of your distress (sinking, collision, aground, fire, heart attack, life-threatening injury, etc.).
5. State the kind of assistance your desire (pumps, medical aid, etc.).
6. Report the number of persons aboard and condition of any injured.
7. Estimate the present seaworthiness and condition of your vessel.
8. Give your vessel's description: length, design (power or sail), color and other distinguishing marks. The total transmission should not exceed 1 minute.
9. End the message by saying **"OVER"**. Release the microphone button and listen.
10. If there is no answer, repeat the above procedure. If there is still no response, try another channel.

CALLING ANOTHER VESSEL (CHANNEL 16 OR 9)

Channel 16 may be used for initial contact (hailing) with another vessel. However, its most important use is for emergency messages. This channel must be monitored at all times except when actually using another channel. It is monitored by the U.S. and Canadian Coast Guards and by other vessels. **Use of channel 16 for hailing must be limited to initial contact only.** Calling should not exceed 30 seconds, but may be repeated 3 times at 2-minute intervals. In areas of heavy radio traffic, congestion on channel 16 resulting from its use as a hailing channel can be reduced significantly in U.S. waters by using **channel 9** as the initial contact (hailing) channel for non-emergency communications. Here, also, calling time should not exceed 30 seconds but may be repeated 3 times at 2-minute intervals.

Prior to making contact with another vessel, refer to the channel charts in this manual, and select an appropriate channel for communications after initial contact. For example, Channels 68 and 69 of the U.S. VHF Charts are some of the channels available to non-commercial (recreational) boaters. Monitor your desired channel in advance to make sure you will not be interrupting other traffic, and then go back to either channel 16 or 9 for your initial contact.

When the hailing channel (16 or 9) is clear, state the name of the other vessel you wish to call and then **"this is"** followed by the name of your vessel and your Station License (Call Sign). When the other vessel returns your call, immediately request another channel by saying **"go to"**, the number of the other channel, and "over." Then switch to the new channel.

When the new channel is not busy, call the other vessel.

After a transmission, say **"over"**, and release the microphone's push-totalk (PTT) switch. When all communication with the other vessel is completed, end the last transmission by stating your Call Sign and the word **"out"**. Note that it is not necessary to state your Call Sign with each transmission, only at the beginning and end of the contact.

Remember to return to Channel 16 when not using another channel. Some radios automatically monitor Channel 16 even when set to other channels or when scanning; see your Owner's Manual.

MAKING TELEPHONE CALLS

To make a radiotelephone call, use a channel designated for this purpose, The fastest way to learn which channels are used for radiotelephone traffic is to ask at a local marina. Channels available for such traffic are designated **Public Correspondence** channels on the channel charts in this manual. Some examples for USA use are Channels 24, 25, 26, 27, 28, 84, 85, 86, and 87. Call the marine operator and identify yourself by your vessel's name, The marine operator will then ask you how you will pay for the call (telephone credit card, collect, etc.) and then link your radio transmission to the telephone lines. The marine telephone company managing the VHF channel you are using may charge a link-up fee in addition to the cost of the call.

OPERATING ON CHANNELS 13 AND 67

Channel 13 is used at docks and bridges and by vessels maneuvering in port. Messages on this channel must concern navigation only, such as meeting and passing in restricted waters.

Channel 67 is used for navigational traffic between vessels.

By regulation, power is normally limited to 1 Watt on these channels. Your radio is programmed to automatically reduce power to this limit on these channels. However, in certain situations it may be necessary

to temporarily use a higher power. See section (High/Low key) for means to temporarily override the low-power limit on these two channels.

PROHIBITED COMMUNICATIONS

The FCC prohibits the following communications:

- False distress or emergency messages:
- Messages to "any boat" except in emergencies and radio tests;
- Messages to or from a vessel on land;
- Transmission while on land;
- Obscene, indecent, or profane language (potential fine of $10,000).

NOAA WEATHER ALERT TESTING

In the event of a major storm or other appreciable weather condition requiring vessels at sea or other bodies of water to be notified, the NOAA (National Oceanographic and Atmospheric Administration) broadcasts a 1050 Hz tone that some marine VHF radios can detect. (Refer to Section “NOAA WEATER ALERT” on how to use this feature.) This tone, when detected, will produce a loud beep from the radio speaker to signal that a weather alert is being broadcast.

In order to test this system, the NOAA broadcasts the 1050 Hz tone every Wednesday, sometime between 11 AM and 1 PM. Any marine VHF radio that can detect the weather alert tone, may use this test to verify that this feature is functioning properly,

DIGITAL SELECTIVE CALLING (DSC)

Digital Selective Calling is a semi-automated method of establishing a radio call, it has been designated by the International Maritime Organization (IMO) as an international standard for establishing VHF, MF and HF radio calls. It has also been designated part of the Global Maritime Distress and Safety System (GMDSS) and it is planned that DSC will eventually replace aural watches on distress frequencies and will be used to announce routine and urgent maritime safety information broadcasts.

This new service will allow mariners to instantly send a distress call with GPS position (when connected to the transceiver) to the US Coast Guard and other vessels within range of the transmission. DSC will also allow mariners to initiate or receive distress, urgency, safety and routine calls to or from another vessel equipped with a DSC transceiver.

USCG DSC Watch

The USCG has plans to upgrade its VHF National Distress System (expected by 2005), so at the time of printing only larger vessels that are required to carry VHF DSC radios will be able to hear your distress transmission

MARITIME MOBILE SERVICE IDENTITY (MMSI)

A MMSI is a nine digit number used on Marine Transceivers capable of using Digital Selective Calling (DSC). This number is used like a telephone number to selectively call other vessels.

USING DIGITAL SELECTIVE CALLING FEATURES

Distress Call

Transmits a DSC Distress message to all radios equipped to receive a DSC Distress call. Some Standard Horizon radios may be connected to a GPS to also transmit the Latitude, Longitude of the vessel.

Individual Call

This feature allows the user to contact another vessel capable of using DSC and automatically switch the radio to a desired working channel. This feature is similar to calling a desired vessel on CH16 and requesting them to go to another channel.

Group Call

This feature allows the user to contact a group or vessels capable of using DSC to automatically switch the radios to a desired working channel for voice communication.

Urgency Call

This call should be used when a vessel may not be truly in distress, but have a potential problem that might lead to a distress situation.

Safety Call

Used to transmit boating safety information to other vessels. This message usually contains information about an overdue boat, a derelict afloat, loss of a navigation aid or an important meteorological message.

Position request
Used to poll another vessel position via DSC and show it on the LCD of the radio.

Telephone Call
Used to automatically place a telephone call through a shore based telephone company. (In the U.S. market contact maritel at 1866 - marinet for subscription details)

ADDITIONAL DIGITAL SELECTIVE CALLING
For additional information the USCG has an excellent site that should be visited at www.navcen.uscg.mil/marcoms/gmdss/dsc.html

ABOUT VHF RADIO
The radio frequencies used in the VHF marine band lie between 156 and 158 MHz with some shore stations available between 161 and 163 MHz. The marine VHF band provides communications over distances that are essentially "line of sight" (VHF signals do not travel well through objects such as buildings, hills or trees). Actual transmission range depends much more on antenna type, gain and height than on the power output of the transmitter. On a fixed mount 25W radio transmission expected distances can be greater than 15 miles, for a portable 5W radio transmission the expected distance can be greater than 5 miles in "line of sight".

SELECTING AN ANTENNA
Marine antennas are made to radiate signals equally in all horizontal directions, but not straight up. The objective of a marine antenna is to enhance the signal toward the horizon. The degree to which this is accomplished is called the antenna's gain. It is measured in decibels (dB) and is one of the major factors in choosing an antenna. In terms of effective radiated power (ERP), antennas are rated on the basis of how much gain they have over a theoretical antenna with zero gain. A 3 foot, 3dB gain antenna represents twice as much gain over the imaginary antenna. The length of the antenna you choose, however, must also be related to the size of your boat. Typically a 3 foot 3dB gain stainless steel whip is used on a sailboat mast. The longer 8 foot 6dB fiberglass whip is primarily used on power boats that require the additional gain.

COAXIAL CABLE
VHF antennas are connected to the transceiver by means of a coaxial cable – a shielded transmission line. Coaxial cable is specified by it's diameter and construction. For runs less than 20 feet, RG-58/U, about 1/4 inch in diameter is a good choice. For runs over 20 feet but less than 50 feet, the larger RG-8 or RG-213/U should be used for cable runs over 50 feet RG-8 should be used. For installation of the connector onto the coaxial cable refer to the figure below.

To get your coax cable through a fitting and into your boat's interior, you may have to cut off the end plug and reattach it later. You can do this if you follow the directions that come with the connector. Be sure to make good soldered connections.

17. MAINTENANCE

The inherent quality of the solid-state components used in this transceiver will provide many years of continuous use. Taking the following precautions will prevent damage to the transceiver.

- Keep the microphone connected or the jack covered at all times to prevent corrosion of electrical contacts;
- Never key the microphone unless an antenna or suitable dummy load is connected to the transceiver.
- Ensure that the supply voltage to the transceiver does not exceed 16 VDC or fall below 11 VDC.
- Use only approved accessories and replacement parts.

In the unlikely event of serious problems, please contact your Dealer or our repair facility.

18. CHANNEL ASSIGNMENTS

Tables on the following columns list the VHF Marine Channel assignments for U.S.A. and International use. Below are listed some data about the charts.

1) VTS. Where indicated, these channels are part of the U.S. Coast Guard's **V**essel **T**raffic **S**ystem.
2) Alpha channel numbers, that is, channel numbers followed by the letter A (such as Channel 07**A**) are **simplex** channels on the U.S.A. or Canadian channel assignments whose counterparts in the International assignments are **duplex** channels. International channels do not use "alpha" numbers. If you call the Coast Guard on Channel 16, they will sometimes ask you to **"go to channel 22 Alpha."** This is a channel assigned to U.S.A, and Canadian Coast Guards for handling distress and other calls. If your radio is set for **International** operation you will go to Channel 22 instead of 22**A**, and will not be able to communicate with the Coast Guard. To use Channel 22**A**, your radio must be set for **USA** or **Canada** operation, usually

by a U/I/C (USA/International/Canada) control or combination of controls. Channel 22 (without an "A") is an **International** duplex channel for port operations. Some radios indicate an "A" adjacent to the alpha channels on the display; on others "alpha" is not indicated but the proper channel is selected based on the U/I/C setting.

3) Bridge-to-Bridge channels (for example, Channel 13) are for use by bridge operators on intercoastal waterways and rivers. It is also used by marine vessels in the vicinity of these bridges for navigation and for communicating with the bridge operators. **Note that a limit of 1 Watt is specified for these channels.** See page 44 for additional information.
4) The **S/D** column on the chart indicates either S (simplex) or D (duplex). **Simplex** means transmitting and receiving on the same frequency. Only one party at a time can talk, unlike a telephone. Be sure to say **"over"** and release your microphone push-to-talk switch at the end of each transmission. **Duplex** operation involves the use of one frequency for transmitting and a separate frequency for receiving. On channels specified as duplex on the charts, correct mode of operation is established automatically by your radio when you select a channel; you cannot change the mode. And you still must release the push-to-talk switch after each transmission in order to listen to the radio.
5) Channels normally used by recreational boaters are those that include the term "non-commercial" in the **Channel Use** column of the chart. Some of these are shared with other users and some are used only in certain geographic regions.
6) Marine vessels equipped with VHF radios are required to monitor Channel 16.

VHF MARINE CHANNEL CHART

CH	U	C	I	S/D	TX	RX	CHANNEL USE
01		X	X	D	156.050	160.650	Public Correspondence(Marine Operator)
01A	X			S	156.050		Port Operation and Commercial. VTS in selected areas
02		X	X	D	156.100	160.700	Public Correspondence(Marine Operator)
03		X	X	D	156.150	160.750	Public Correspondence(Marine Operator)
03A	**X**			**S**	**156.150**		**US Government only, Coast Guard**
04			X	D	156.200	160.800	Public Correspondence(Marine Operator), Port operation, ship movement
04A		X		S	156.200		Pacific coast: Coast Guard, East Coast: Commercial fishing
05A	X	X		S	156.250		Port operation. VTS in Seattle.
05			X	D	156.250	160.850	Public Correspondence(Marine Operator), Port operation ship, movement
06	X	X	X	S	156.300		Inter-ship Safety
07			X	D	156.350	160.950	Public Correspondence(Marine Operator), Port operation, ship movement
07A	X	X		S	156.350		Commercial
08	X	X	X	S	156.400		Commercial(Inter-ship only)
09	X	X	X	S	156.450		Boater Calling channel, Commercial& Non-commercial(Recreational)
10	X	X	X	S	156.500		Commercial
11	X	X	X	S	156.550		Commercial. VTS in selected areas.
12	X	X	X	S	156.600		Port operation. VTS in selected areas.
13	X	X	X	S	156.650		Inter-ship Navigation Safety(Bridge-to-bridge)
14	X	X	X	S	156.700		Port operation. VTS in selected areas.
15	X			S	---	156.750	Environmental(Receive only)
15		X	X	S	156.750		Commercial, non-commercial, ship movement(1W)
16	X	X	X	S	156.800		International Distress, Safety and Calling.
17	X	X	X	S	156.850		State Controlled(1 W)
18			X	D	156.900	161.500	Port operation, ship movement
18A	X	X		S	156.900		Commercial
19			X	D	156.950	161.550	Port operation, ship movement
19A	X			S	156.950		US: Commercial
19A		X		S	156.950		Coast Guard
20	X		X	D	157.000	161.600	Canadian Coast Guard Only, International: port operations and shipment
20		X		D	157.000	161.600	Canadian Coast Guard Only, International: port operations and shipment(1W)
20A	X			S	157.000		Port Operation
21			X	D	157.050	161.650	Port operation, ship movement
21A	**X**	**X**		**S**	**157.050**		**U.S. Gove rnment Only, Canadian Coast Guard**
22			X	D	157.100	161.700	Port operation, ship movement
22A	X	X		S	157.100		US and Canadian Coast Guard Liaison and Maritime Safety Information Broadcasts announced on channel16
23		X	X	D	157.150	161.750	Public Correspondence(Marine Operator)
23A	**X**			**S**	**157.150**		**U.S. Government Only**
24	X	X	X	D	157.200	161.800	Public Correspondence(Marine Operator)
25	X	X	X	D	157.250	161.850	Public Correspondence(Marine Operator)
26	X	X	X	D	157.300	161.900	Public Correspondence(Marine Operator)
27	X	X	X	D	157.350	161.950	Public Correspondence(Marine Operator)
28	X	X	X	D	157.400	162.000	Public Correspondence(Marine Operator)
60		X	X	D	156.025	160.625	Public Correspondence(Marine Operator)
61			X	D	156.075	160.675	Public Correspondence(Marine Operator), Port operation, ship movement
61A	**X**	**X**		**S**	**156.075**		**U.S. Government Only, Canadian Coast Guard-Pacific Coast, Commercial Fishing-East Coast**
62			X	D	156.125	160.725	Public Correspondence(Marine Operator), Port operation, ship movement
62A		X		S	156.125		Pacific Coast: Coast Guard; East Coast: commercial fishing only
63			X	D	156.175	160.775	Public Correspondence(Marine Operator), Port operation, ship movement
63A	X			S	156.175		Port Operation and Commercial. VTS in selected areas.
64		**X ???**	X	D	156.225	160.825	Public Correspondence(Marine Operator), Port operati on, ship movement
64A	**X**	**X**		**S**	**156.225**		**U.S. Government Only, Canadian Commercial Fishing**
65			X	D	156.275	160.875	movement

65A	X	X		S	156.275		Port Operations
66			X	D	156.325	160.925	Public Correspondence(Marine Operator), Port operation, ship movement
66A	X			S	156.325		Port Operations
66A		X		S	156.325		Port Operations (1W)
67	X	X	X	S	156.375		US: Commercial. Used for Bridge-to-bridge communications in lower Mississippi River. Inter-ship only, Canada: Commercial fishing, S&R
68	X	X	X	S	156.425		Non-commercial(Recreational)
69	X	X	X	S	156.475		US: Non-commercial(Recreational), Canada: Comme rcial fishing only. International: Port operations and Ship movement
70	X	X	X	S	156.525		Digital selective calling(voice communications not allowed)
71	X	X	X	S	156.575		US, Canada: Non-commercial(Recreational), International: Port operations and Ship movement
72	X	X	X	S	156.625		Non-commercial(Inter-ship only)
73	X	X	X	S	156.675		US: Port Operations, Canada: Commercial fishing only, International: Inter-ship, Port operations and Ship movement
74	X	X	X	S	156.725		US: Port Operations, Canada: Commercial fishing only, International: Inter-ship, Port operations And Ship movement
77	X	X		S	156.875		Port Operations (inter-s hip only) (1W)
77			X	S	156.875		Port Operations (inter-s hip only)
78			X	D	156.925	161.525	Public Correspondence(Marine Operator), Port operation, ship movement
78A	X	X		S	156.925		Non-commercial(Recreational)
79			X	D	156.975	161.575	Port operation and Ship movement
79A	X	X		S	156.975		Commercial
80			X	D	157.025	161.625	Port operation, ship movement
80A	X	X		S	157.025		Commercial
81			X	D	157.075	161.675	Port operation, ship movement
81A	**X**	**X**		**S**	**157.075**		**U.S. Government Only –Environmental protection operations.**
82			X	D	157.125	161.725	Public Correspondence (Marine Operator), Port operation, ship movement
82A	**X**	**X**		**S**	**157.125**		**U.S. Government Only, Canadian Coast Guard Only**
83		**X**		D	157.175	161.775	**Canadian Coast Guard Only**
83A	**X**	**X**		**S**	**157.175**		**U.S. Government Only, Canadian Coast Guard Only**
83			X	D	157.175	161.775	Public Correspondence (Marine Operator)
84	X	X	X	D	157.225	161.825	Public correspondence(Marine Operator)
85	X	X	X	D	157.275	161.875	Public correspondence(Marine Operator)
86	X	X	X	D	157.325	161.925	Public correspondence(Marine Operator)
87	X	X	X	D	157.375	161.975	Public correspondence(Marine Operator)
88		X	X	D	157.425	162.025	Public correspondence (ship-to-coast)
88A	X			S	157.425		Commercial, Inter-ship Only
WX01	X	X	X	D	---	162.550	Weather (receive only)
WX02	X	X	X	D	---	162.400	Weather (receive only)
WX03	X	X	X	D	---	162.475	Weather (receive only)
WX04	X	X	X	D	---	162.425	Weather (receive only)
WX05	X	X	X	D	---	162.450	Weather (receive only)
WX06	X	X	X	D	---	162.500	Weather (receive only)
WX07	X	X	X	D	---	162.525	Weather (receive only)
WX08	X	X	X	D	---	161.650	Weather (receive only)
WX09	X	X	X	D	---	161.775	Weather (receive only)
WX10	X	X	X	D	---	163.275	Weather (receive only)

The **BOLD** channels above are not for use by the general public in US water, unless proper authorization is given.

19. Test Mode

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