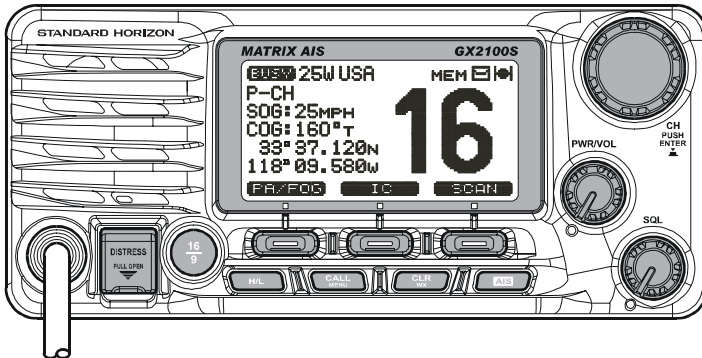# STANDARD HORIZON

MATRIX GX2000/GX2100

25 Watt VHF/FM
Marine Transceiver

Owner's Manual

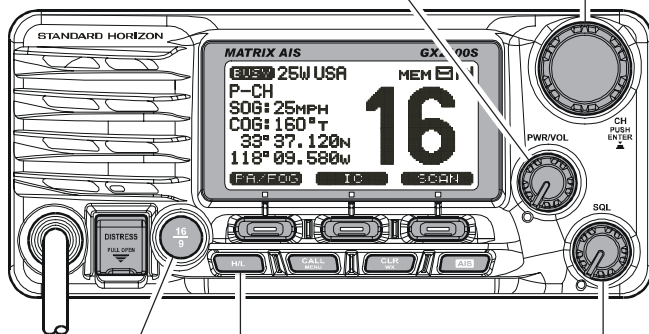# VERTEX STANDARD CO., LTD.

QUICK REFERENCE GUIDE I

You can do the basic operation in numerical order of the illustration below.

---

① [PWR/VOL] KNOB

Press and hold this knob until the LCD turns on, and adjust the audio level.

② [CH] KNOB

Selects the operating channel.

---

⑤ [16/9] BUTTON

- Press to recall channel 16.
- Press and hold to recall channel 9.

④ [H/L] BUTTON

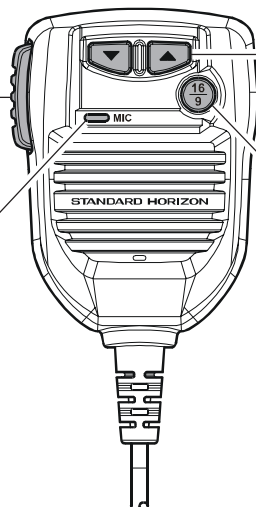When pressed, toggles the transmit power between High (25W) and Low (1W).

③ [SQL] KNOB

Move this control clockwise to squelch or counter clockwise un-squelch the radio.

---

⑥ [PTT] SWITCH

Speak into the microphone in a normal voice level while pressing this switch.

MICROPHON

② [▼] / [▲] KEY

Selects the operating channel.

⑤ [16/9] BUTTON

- Press to recall channel 16.
- Press and hold to recall channel 9.

QUICK REFERENCE GUIDE II

[CH] KNOB

- Select the operating channel.
- Select the item in the "SETUP MENU" and "DSC MENU".
- When the "SETUP MENU" or "DSC MENU" is selected, pressing this knob saves a selection.

[DISTRESS] BUTTON

Note: for this key to operate a MMSI must be programmed.
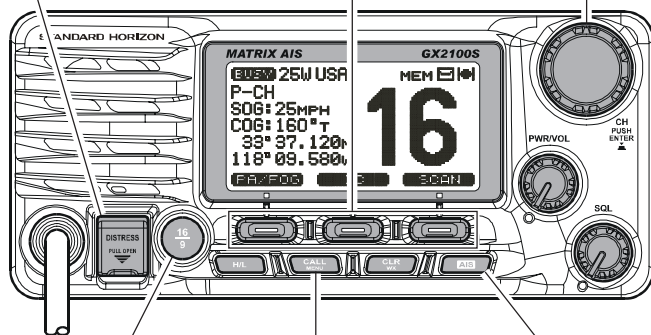Lift the red cover, press the Distress button once, then press and hold until the radio alarms.

[PROGRAMMABLE] KEY

These three keys functions can be customized by the Setup Menu mode.
The factory defaults are [PA/FOG], [IC], and [SCAN] key.

MATRIX AIS   GX2100S
BUSY 25W USA   MEM ✉ ▶◀
P-CH
SOG:25MPH
COG:160°T   **16**
 33°37.120N
118°09.580W
PA/FOG   IC   SCAN

PWR/VOL   CH PUSH ENTER

SQL

[CALL/MENU] BUTTON

- Press to access the "DSC MENU".
- Press and hold to access the "SETUP MENU".

[CLR/WX] BUTTON

- Press to cancel the menu selection.
- Press and hold to recall the last-used NOAA Weather Channel.

[AIS] BUTTON

Press to change the display to AIS (Automatic Identification System) mode

DESKTOP/OVERHEAD MOUNTING THE RADIO
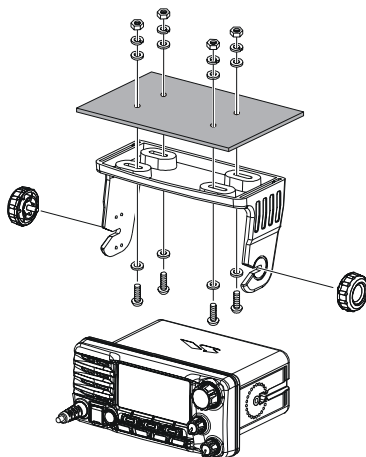
The supplied universal mounting bracket allows desktop or overhead nounting.

Use a 13/64" (5.2-mm) bit to drill the holes to a surface which is more 0.4 inch (10 mm) thick and can support more than 3.3 lbs (1.5 kg) and secure the bracket with the supplied screws, spring washers, flat washers, and nuts.
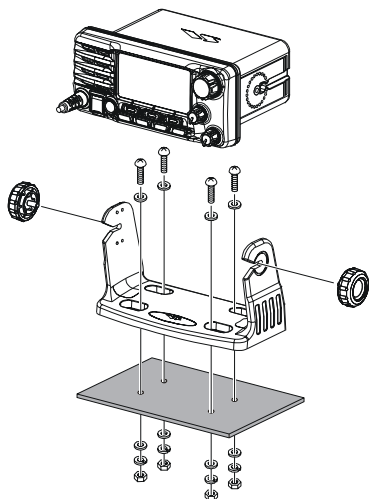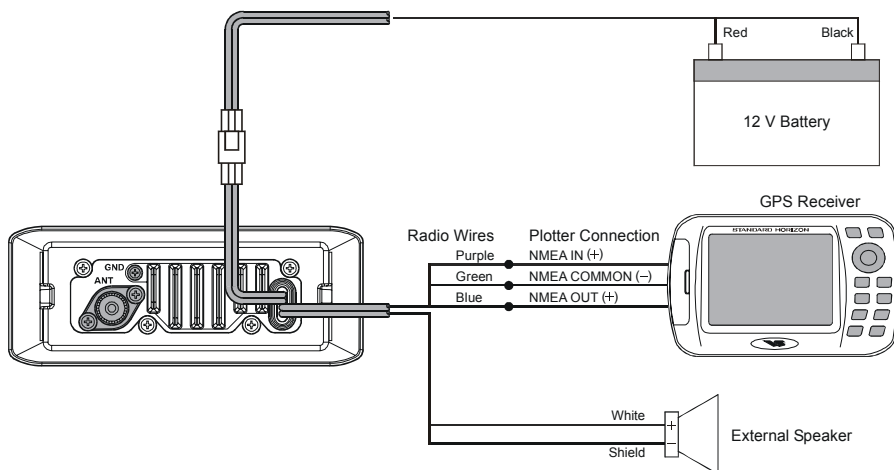

**DESKTOP MOUNTING**   **OVERHEAD MOUNTING**

ELECTRICAL CONNECTIONS

FLUSH MOUNTING THE RADIO

The optional MMB-84 Flush-Mount Bracket allows flush mounting the radio to your vessel.

1. To assist in flush mounting, a template has been included. Use this template to assess the mounting location.
2. Use the template to mark the location where the rectangular hole is to be cut. Confirm the space behind the dash or panel is deep enough to accommodate the transceiver (at least 6.7 inches or 17 cm deep).
   There should be at least 1/2 inch (1.3 cm) between the transceiver's heatsink and any wiring, cables or structures.
3. Cut out the rectangular hole and insert the transceiver.
4. Fasten the brackets to the sides of the transceiver with the lock washer nut combination; so that the mounting screw base faces the mounting surface.
5. Turn the adjusting screw to adjust the tension so that the transceiver is tight against the mounting surface.

Bracket

Adjusting Screw

GND
ANT

Lock-washer nut combination
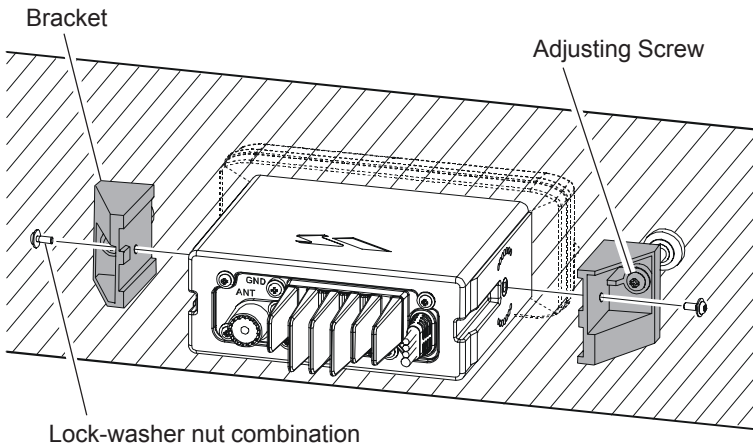
FLUSH MOUNTING

1 GENERAL INFORMATION

1.1 INTRODUCTION

The STANDARD HORIZON **GX2000/2100** is a VHF/FM Marine Transceiver designed for use in the frequency range of 156.025 to 163.275 MHz. The **GX2000/2100** can be operated from 11 to 16 VDC and has a switchable RF output power of 1 watt or 25 watts.

The **GX2100** is equipped with the AIS (Automatic Identification System) receiver and its display program which enables to identify and avoid other large vessels nearby your vessel. The **GX2100** is equipped with the display program of the AIS too. Threrfore, the **GX2000** also enables to identify and avoid other large vessels nearby your vessel, if the AIS receiver (not supply) is commected.

The **GX2000/GX2100** is capable of DSC (Digital Selective Calling) Class D operation and an Enhanced second station RAM+ mic (**CMP30** remote-control speaker/microphone with display) or **VH-310** Handset. Class D operation allows continuous receiving of Digital Selective Calling functions on channel 70 even if the radio is receiving a call.

The **GX2000/GX2100** operates on all currently-allocated marine channels which are switchable for use with USA, International, or Canadian regulations. It has an emergency channel 16 which can be immediately selected from any channel by pressing the red [**16/9**] key. NOAA Weather channels can also be accessed immediately by Press and holding the [**CLR**(**WX**)] key with channel selection.

Other features of the **GX2000/GX2100** include: 30W PA/Fog, multi-station intercom, scanning, priority scanning, submersible speaker mic, high and low voltage warning, and GPS repeatability.

2 PACKING LIST

When the package containing the transceiver is first opened, please check it for the following contents:

- **GX2000** or **GX2100** Transceiver
- Mounting Bracket and attaching hardware
- Owner's Manual
- Warning Sticker
- Power Cord

3   OPTIONS

MMB-84 ....Flush-Mount Bracket
CMP30B/W ....Remote-Access Microphone (RAM+ Mic, Black/White)
VH-310 ....Remote Handset (available in Black)
CT-100 ....23-foot Extension Cable for RAM+ Mic
CVS2500 ....Voice Scrambler
MLS-310 ....10W amplified External Speaker with on/off Volum control
MLS-300 ....External Loudspeaker
101W.. Mini White Extension Speaker
220SW ....4.5" Round Hail/PA Horn
240SW ....5" x 8" Rectangular Hail/PA Horn
MEK-4 .... Microphone Extension Kit (to remote front panel mic to rear panel)

4   SAFETY / WARNING INFORMATION

This radio is restricted to occupational use, work related operations only where the radio operator must have the knowledge to control the exposure conditions of its passengers and bystanders by maintaining the minimum separation distance of 0.89 m (2.92 feet). Failure to observe these restrictions will result in exceeding the FCC RF exposure limits.

Antenna Installation:

The antenna must be located at least 0.89 m (2.92 feet) away from passengers in order to comply with the FCC RF exposure requirements.

Lithium Battery Included:

This radio contains a Lithium Battery. At the end of radio's useful life, under various state and lows, it may be illegal to dispose of Lithium Battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

ON-LINE WARRANTY REGISTRATION

Please visit www.standardhorizon.com to register the **GX2000/ GX2100** Marine VHF. It should be noted that visiting the Web site from time to time may be beneficial to you, as new products are released they will appear on the STANDARD HORIZON Web site.

PRODUCT SUPPORT INQUIRIES

If you have any questions or comments regarding the use of the **GX2000/GX2100**, you can visit the STANDARD HORIZON Web site to send an E-Mail or contact the Product Support team at 800-767-2450 M-F 7:00-5:00PST.

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5   FCC RADIO LICENSE INFORMATION

Standard Horizon radios comply with the Federal Communication Commission (FCC) requirements that regulate the Maritime Radio Service.

5.1   STATION LICENSE

An FCC ship station license is no longer required for any vessel traveling in U.S. waters (except Hawaii) which is under 20 meters in length. However, any vessel required to carry a marine radio on an international voyage, carrying a HF single side band radiotelephone or marine satellite terminal is required to have a ship station license. FCC license forms, including applications for ship (605) and land station licenses can be downloaded via the Internet at http://www.fcc.gov/Forms/Form605/605.html. To obtain a form from the FCC, call (888) 225-5322.

5.2   RADIO CALL SIGN

Currently the FCC does not require recreational boaters to have a Ship Radio Station License. The USCG recommends the boats registration number and the state to be used.

5.3   CANADIAN SHIP STATION LICENSING

You may need a license when traveling in Canada. If you do need a license contact their nearest field office or regional office or write:

Industry Canada
Radio Regulatory Branch
Attn: DOSP
300 Slater Street
Ottawa, Ontario
Canada, KIA 0C8

5.4   FCC / INDUSTRY CANADA INFORMATION

The following data pertaining to the transceiver is necessary to fill out the license application.

Type Acceptance .... FCC Part 80
Output Power .... 1 Watt (low) and 25 Watts (high)
Emission 16K0G3E, 16K0G2B
Frequency Range .... 156.025 to 163.275 MHz
FCC Type Number K6630443X3D
Industry Canada Type Approval 511B-30443X3S

6 FCC NOTICE

NOTICE

Unauthorized changes or modifications to this equipment may void compliance with FCC Rules. Any change or modification must be approved in writing by STANDARD HORIZON.

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equpmet into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

7 GETTING STARTED

7.1   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".
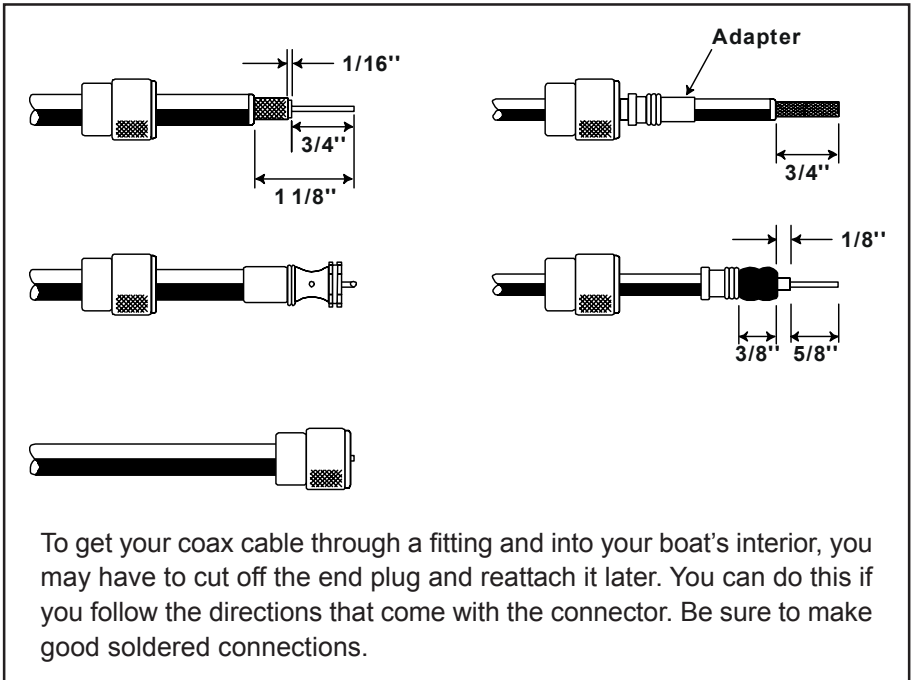
7.2   SELECTING AN ANTENNA

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.

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.

7.3   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-8X or RG-213/U should be used for cable runs over 50 feet RG-8X 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.

8 INSTALLATION

8.1 LOCATION

The radio can be mounted at any angle. Choose a mounting location that:
- is far enough from any compass to avoid any deviation in compass reading due to the speaker magnet
- provides accessibility to the front panel controls
- allows connection to a power source and an antenna
- has nearby space for installation of a microphone hanger
- the antenna must be mounted at least 3 feet from radio

Note: To insure the radio does not affect the compass or radios performance is not affected by the antenna location, temporarily connect the radio in the desired location and:

a. Examine the compass to see if the radio causes any deviation
b. Connect the antenna and key the radio. Check to ensure the radio is operating correctly by requesting a radio check.

8.2 MOUNTING THE RADIO

8.2.1 Supplied Universal Mounting Bracket

The supplied universal mounting bracket allows overhead or desktop mounting.

Use a 13/64" (5.2-mm) bit to drill the holes to a surface which is more 0.4 inch (10 mm) thick and can support more than 3.3 lbs (1.5 kg) and secure the bracket with the supplied screws, spring washers, flat washers, and nuts.

8.2.2 Optional MMB-84 Flush Mount Bracket

1. Make a rectangular template for the flush mount measuring 2.9" H x 8.1" W (72 x 205 mm).
2. Use the template to mark the location where the rectangular hole is to be cut. Confirm the space behind the dash or panel is deep enough to accommodate the transceiver (at least 6 inches deep).
    There should be at least 1/2 inch between the transceiver's heatsink and any wiring, cables or structures.
3. Cut out the rectangular hole and insert the transceiver.
4. Fasten the brackets to the sides of the transceiver with the lock washer nut combination; so that the mounting screw base faces the mounting surface (see illustration below).
5. Turn the adjusting screw to adjust the tension so that the transceiver is tight against the mounting surface.

Bracket

Adjusting Screw

Lock-washer nut combination
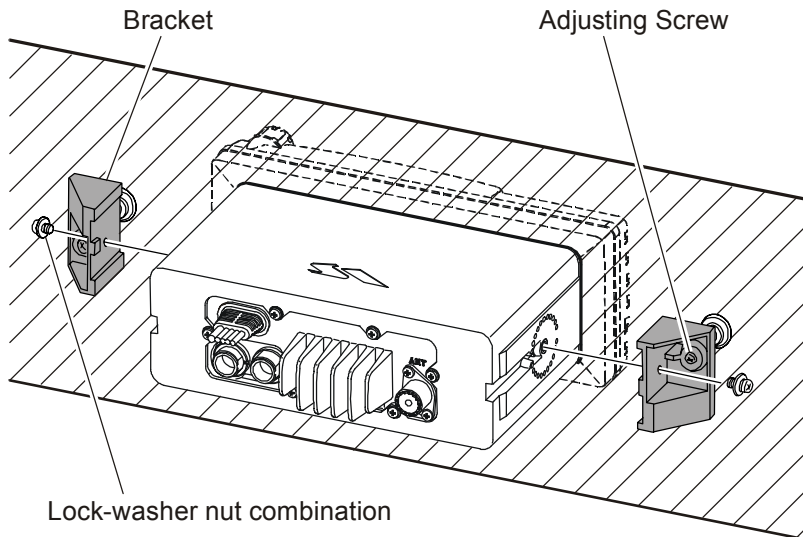
8.3   ELECTRICAL CONNECTIONS

CAUTION

| Reverse polarity connections will damage the radio! |
| --- |

Connect the power cord and antenna to the radio. Antenna and Power Supply connections are as follows:

1. Mount the antenna at least 3 feet away from the radio. At the rear of the radio, connect the antenna cable. It must have a PL259 connector. RG-8/U coaxial cable must be used if the antenna is 25 feet or more from the radio. RG58 cable can be used for distances less than 25 feet.
2. Connect the red power wire to a 13.8 VDC ±20% power source. Connect the black power wire to a negative ground.
3. If an optional remote extension speaker is to be used, refer to section 3.3 for connections.
4. It is advisable to have a Certified Marine Technician check the power output and the standing wave ratio of the antenna after installation.
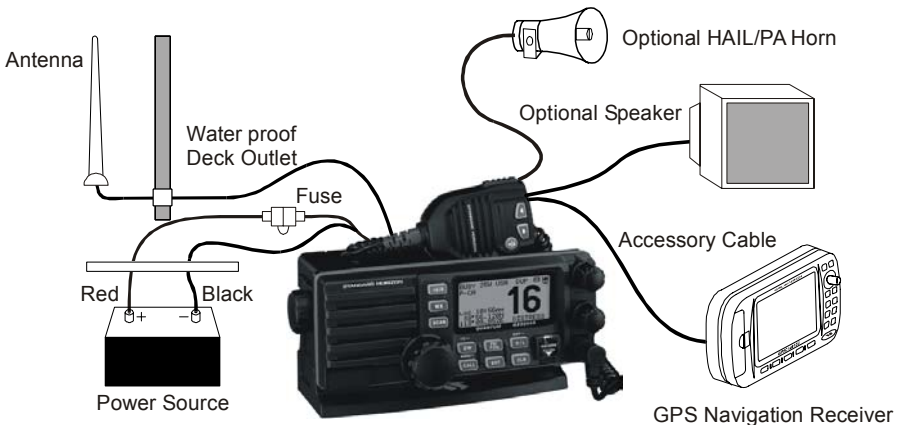

Fuse Replacement

To take out the Fuse from the Fuse Holder, hold the both ends of the Fuse Holder and pull the Fuse Holder apart, do not bend the Fuse Holder. When you replace the Fuse, please confirm that the Fuse is tightly fixed on the metal contact located inside the Fuse Holder. If the metal contact holding the fuse is loose, the Fuse holder may heat up.
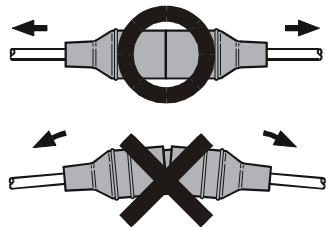
8.4   ACCESSORY CABLE

Wire Color/Description	Connection Examples
WHITE - External Speaker (+)	Connect to external 4 Ohm audio speaker
SHIELD - External Speaker (−)	Connect to external 4 Ohm audio speaker
RED - PA Speaker (+)	Connect to external 4 Ohm PA speaker
SHIELD - PA Speaker (−)	Connect to external 4 Ohm PA speaker
GREEN - NMEA Ground	Connect to NMEA (−) connection of GPS
BLUE- NMEA Input (+)	Connect to NMEA (+) output of GPS
GRAY-NMEA Output (+)	Connect to NMEA (+) input of GPS

When connecting the external speaker or GPS navigation receiver, strip off about 1 inch (2.5 cm) of the specified wire's insulation, then splice the ends together.
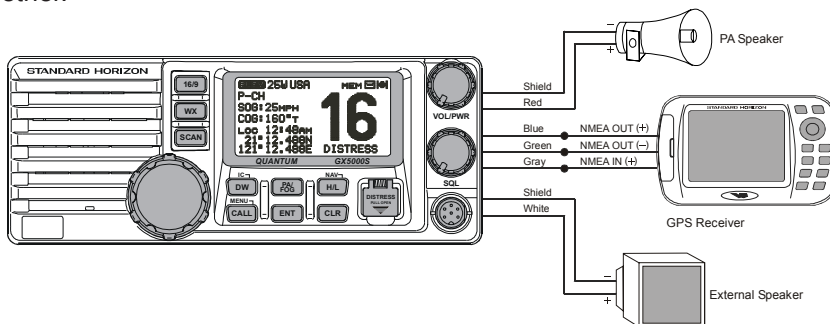
- The GPS must have the NMEAut turned on and set to 4800 Baud in the setup menu. If there is a selection for parity select none.
- For further information on interfacing /setting up your GPS. Please contact the manufacturer of the GPS receiver.
- **GX2000/GX2100** can read NMEA-0183 version 2.0 or higher.
- The NMEA supported sentences are:
  Input: GLL, GGA, RMC and GNS (RMC sentence is recommended)
  Output: DSC and DSE
 (DSC sentences to Standard Horizon Plotter for Position Polling)

If you have further inquires, please feel free to contact Product Support at:
  Phone: (800) 767-2450
  Email: marinetech@vxstdusa.com

8.5   CHECKING GPS CONNECTIONS

After connections have been made between the
GX2000/GX2100 and the GPS, a small satellite icon
will appear on the top right corner of the LCD displayand
displays your current location (Latitude/Longitude) on
the display.
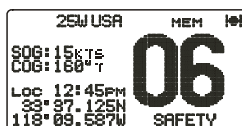
NOTE

> If there is a problem with the NMEA input from a GPS, the GPS icon will
> blink continuously until the connection is corrected.

8.6   CHANGING THE GPS TIME

From the Factory the **GX2000/GX2100** shows GPS satellite time or UTC
time when a optional GPS is connected. A time offset is needed to show the
local time in your area.

1. Press and hold down the [**CALL**(**MENU**)] key until
    "SETUP MENU" appears, then select "GENERAL
    SETUP" with the **CH** knob.
2. Press the **CH** knob, then select "TIME OFFSET" with
    the **CH** knob.
3. Press the **CH** knob, then turn the **CH** knob to select
    time offset from UTC. See illustration below to find
    your offset time from UTC. If "00:00" is assigned,
    the time is the same as UTC (Universal Time Coor-
    dinated or GMT Greenwich Mean Time).
4. Press the **CH** knob to store the time offset.
5. Press the [**CLR**(**WX**)] key several times to return to
    radio operation.
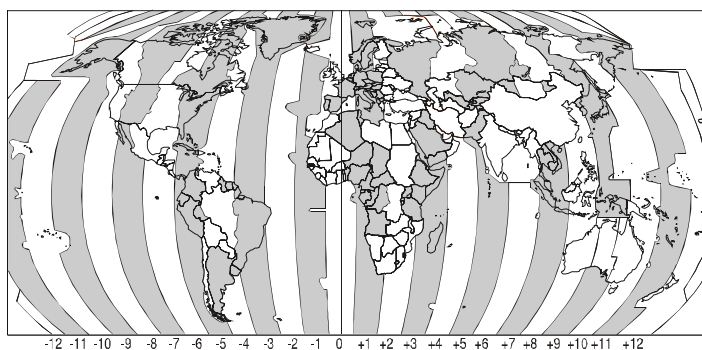
OFFSET TIME TABLE

8.7   CHANGING THE TIME LOCATION

Set the radio show UTC time or local time with the offset inputted in section 8.6 CHANGING THE GPS TIME.

1. Press and hold down the [**CALL**(**MENU**)] key until "SETUP MENU" appears, then select "GENERAL SETUP" with the **CH** knob.
2. Press the **CH** knob, then select "TIME DISPLAY" with the **CH** knob.
3. Press the **CH** knob.
4. Turn the **CH** knob to select "UTC" or "LOCAL".
5. Press the **CH** knob to store the selected setting.
6. Press the [**CLR**(**WX**)] key several times to return to radio operation.

```
    -Setup Menu-
→Radio Setup
 DSC Setup




Set>[ENT], Clear>[CLR]
```

```
    -Radio Setup-
 Dimmer
 Contrast
 Time Offset
→Time Display
 SOG Unit
 Magnetic         ▼
Set>[ENT], Clear>[CLR]
```

```
   -Time Display-
→UTC
 Local




Set>[ENT], Clear>[CLR]
```

8.8   CHANGING COG TO TRUE OR MAGNETIC

Allows the GPS Course Over Ground to be selected to show in True or Magnetic. Factory default is True however following the steps below the COG can be changed to Magnetic.

1. Press and hold down the [**CALL**(**MENU**)] key until "SETUP MENU" appears, then select "GENERAL SETUP" with the **CH** knob.
2. Press the **CH** knob, then select "MAGNETIC" with the **CH** knob.
3. Press the **CH** knob.
4. Turn the **CH** knob to select "MAGNETIC" or "TRUE".
5. Press the **CH** knob to store the selected setting.
6. Press the [**CLR**(**WX**)] key several times to return to radio operation.

```
    -Setup Menu-
→Radio Setup
 DSC Setup




Set>[ENT], Clear>[CLR]
```

```
    -Radio Setup-
 Dimmer
 Contrast
 Time Offset
 Time Display
 SOG Unit
→Magnetic         ▼
Set>[ENT], Clear>[CLR]
```

```
    -Magnetic-
 Magnetic
→True




Set>[ENT], Clear>[CLR]
```

8.9   OPTIONAL CMP30 ENHANCED RAM+ SECOND STATION MIC OR VH-310 HANDSET INSTALLATION

The **GX2000/GX2100** is capable of using a **CMP30** Enhanced RAM+ mic or **VH-310** Handset to remotely control the Radio, DSC and PA/Fog functions. In addition the **GX2000/GX2100** can operate as a full function intercom system.

1. Connect the Extension Cable to the Remote Mic eight pin connector on the rear panel, then tighten the Cable Nut (see illustration below).
2. Referring to illustration below, make a 1.2" (30 mm) hole in the wall, then insert the Extension Cable into this hole. Connect the Gasket and Mount Base to the Extension Cable Connector using the Nut.
3. Drill the four Screw holes (approx. 2 mm) on the wall, then install the Mounting Base to the wall using four screws.
4. Put the Rubber Cap on to the Nut. The installation is now complete.

NOTE

The routing cable can be cut and spliced, however care needs to be taken when reconnecting the wires to ensure water integrity.
Before cutting the cable make sur it is not plugged into the radio. After cutting you will notice there are the following wires:
Yellow, Green, Brown, Purple, Blue, Green, Red※, Shield※
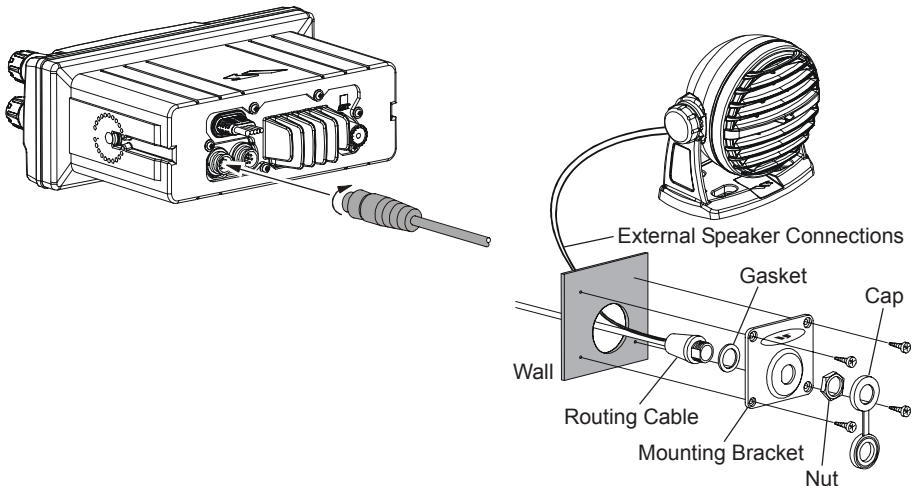※ The red and shield wires arewrapped in foil. Remove the foil, and seperate the Red and shield wires.

External Speaker Connections

Wall

Gasket

Cap

Routing Cable

Mounting Bracket

Nut

Figure 3. Enhanced RAM+ MIC Installation

Remote Mic or External Speaker Selection

By default the RAM+ or **VH-310** Handset internal speaker is turned on, how-ever using the RAM+ mic (or **VH-310** Handset) this speaker can be turned off so the external speaker can be used.

RAM+ mic procedure

1.   Press and hold the [**CALL**(**ENT**)] key.
2.   Press the [▲] or [▼] key to select "RADIO SETUP."
3.   Press the [**CALL**(**ENT**)] key.
4.   Press the [▼] key to until "EXT SPK" is shown and press the [**CALL**(**ENT**)] key.
5.   Press the [▲] or [▼] key to select "oF" (External speaker off) or "on" (External speaker on).
6.   Press the [**CALL**(**ENT**)] key to save the selection.
7.   Press the [**16/9**] key to exit this mode.
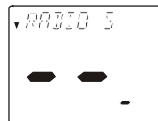
VH-310 Procedure

1.   Press and hold the [**CALL**(**MENU**)] key.
2.   Press the [▲] or [▼] key to select "RADIO SETUP."
3.   Press the [**ENT**] key
4.   Press the [▼] key to until "EXT SPK" is shown and press the [**ENT**] key.
5.   Press the [▲] or [▼] key to select "oF" (External speaker off) or "on" (External speaker on).
6.   Press the [**ENT**] key to save the selection.
7.   Press the [**16/9**] key to exit this mode.
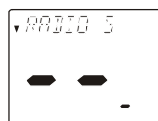
9 CONTROLS AND INDICATORS

NOTE

This section defines each control of the transceiver. See illustration at the next page for location of controls. For detailed operating instructions refer to chapter 10 of this manual.

9.1 CONTROLS AND CONNECTIONS

① **CH** Knob

Rotary knob used to select channels and to choose menu items (such as the DSC menu, Radio Setup and DSC Setup menu). The [**UP**(▲)] / [**DOWN**(▼)] keys on the microphone can also be used to select channels and menu items.

SECONDARY USE

- Press this knob to enter a selection the "SETUP MENU" or "DSC MENU".
- While holding down the [**SCAN**] key and turning this knob, you can confirm memory channels for scanning.
- Adjust the PA output level while in PA/FOG mode.

② **PWR/VOL** Knob (Power Switch / Volume Control)

Turns the transceiver on and off as well as adjusts the audio volume. To turn the transceiver on, press and hold this knob until the LCD turns on. When the power is turned on, the transceiver is set to the last selected channel. Clockwise rotation of this knob increases the audio volume level. To turn the transceiver off, press and hold this knob until the LCD turns off.

SECONDARY USE

When in PA or Fog mode, controls the listen back volume.

③ **SQL** Knob (Squelch Control)

Adjusting this control clockwise, sets the point at which random noise on the channel does not activate the audio circuits but a received signal does. This point is called the squelch threshold. Further adjustment of the squelch control will degrade reception of wanted transmissions.
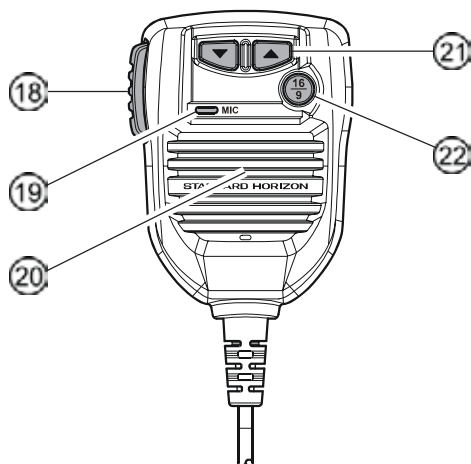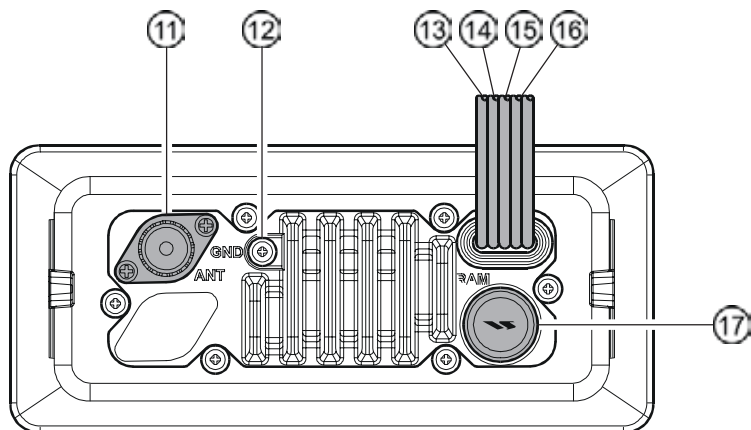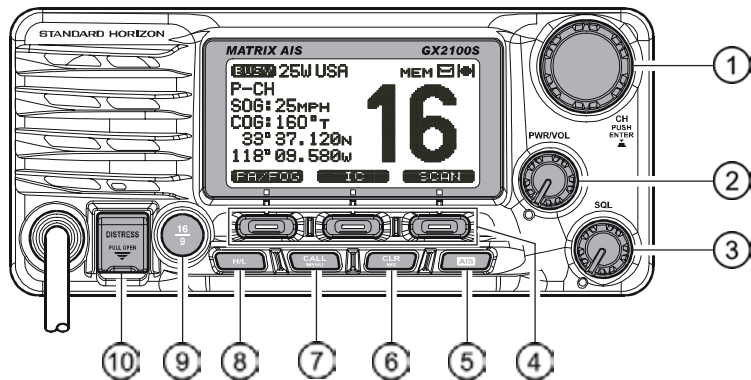
④ Programmable Key

These three keys functions can be customized by the Setup Menu mode. When press one of these key briefly, the key functions will appear at the LCD bottom. The factory defaults are shown below.

[Left] Key: [**PA**] function

Press this key to activate the 30W PA or FOG Horn Function. Refer to section "**10.15 PA/FOG OPERATION**" for details.

[Center] Key: [**IC**] function

Press this key to activate the intercom operation (operate between radio and option mic or handset), when the optional **CMP30** (**RAM3**) Remote Station Microphone or **VH-310** Handset is connected. Refer to section "**10.16 INTERCOM OPERATION**" for details.

[Right] Key: [**SCAN**] function

Press this key to start and stop the scanning of programmed channels. Refer to section "**10.13 SCANNING**" for details.

Secondary use

Press and hold this key to memorizes the selected channel into the transceivers scan memory for scanning ("**MEM**" appears on the display). When press and hold again, it DELETES the channel from the scan memory ("**MEM**" disappears from the display).

⑤ [**AIS**] Key

Press the [**AIS**] key to display the AIS (Automatic Identification System) information on the display. Refer to section "**10.14 AIS OPERATION**" for details.

⑥ [**CLR**(**WX**)] Key

Press the [**CLR**(**WX**)] key briefly to cancel a selection the "Setup Menu" and "DSC Menu".

Press and hold the [**CLR**(**WX**)] key to recall the previously selected NOAA weather channel from any channel. Press and hold the [**CLR**(**WX**)] key again reverts to the previous selected working channel.

Secondary use

Press the [**CLR**(**WX**)] key while pressing and holding the [**16/9**] key to switch the channel group between "USA", "International", and "Canadian".

⑦ [**CALL**(**MENU**)] Key

Press the [**CALL**(**MENU**)] key to access the "DSC MENU".

Secondary use

Press and hold the [**CALL**(**MENU**)] key to access the "SETUP MENU".

⑧ [**H/L**] Key
Press the [**H/L**(**NAV**)] key to toggle between 25 W (High) and 1 W (Low) power. When the TX output power is set to "Low" while the transceiver is on channel 13 or 67, the output power will temporarily switch from "Low" to "High" power until the **PTT** is released. The [**H/L**] key does not function on transmit inhibited and low power only channels.

⑨ [**16/9**] Key
Press the [**16/9**] key briefly to recall channel 16 from any channel location. Press and hold the [**CLR**(**WX**)] key to recall channel 9. Pressing the [**16/9**] key again reverts to the previous selected working channel.
SECONDARY USE
Press the [**CLR**(**WX**)] key while pressing and holding the [**16/9**] key to switch the channel group between "USA", "International", and "Canadian".

⑩ [**DISTRESS**] Key
Used to send a DSC Distress Call. To send the distress call refer to section "**11.3.1 Transmitting a DSC Distress Call**."

⑪ **ANT** Jack (Antenna Jack)
Connects an antenna to the transceiver. Use a marine VHF antenna with an impedance of 50 ohms.

⑫ **GND** Terminal (Ground Terminal)
Connects the **GX2000/GX2100** to a good ground, for safety and optimum performance.
Install only the supplied screw or similar size (M3x6, Stainless Steel) screw.

⑬ Accessory Connection Cable (Green, Blue, Gray, & Brown)
Connects the **GX2000/GX2100** to a GPS receiver and AIS receiver.

⑭ PA Speaker Connection Cable (Red & Shield)
Connects the **GX2000/GX2100** to a optional PA speaker. See section "**3 OPTIONS**" for a list of optional STANDARD HORIZON Speakers.

⑮ External Speaker Connection Cable (White & Shield)
 an external speaker. See section "**3 OPTIONS**" for a list of optional STANDARD HORIZON Speakers.

⑯ DC Input Cable
Connects the radio to a DC power supply capable of delivering 12 to 16V DC.

⑰ **RAM** Connector (Remote Station Microphone Connector)
Connects the **GX2000/GX2100** to the **CMP30** (**RAM3**) Remote Station Microphone or the **VH-310** Handset. Refer to section "**13 CMP30** (**RAM3**) **OPERATION**" or "**14 VH-310 HANDSET OPERATION**" for details

⑱ **PTT** Switch (Push-To-Talk Switch)
Keys the transmitter when the transceiver is in Radio mode. If the transceiver is in the Intercom Operation mode (between the Remote Station Microphone and the Radio), it activates the **GX2000/GX2100** microphone for voice communications.

⑲ Microphone
Transmits the voice message with reduction of background noise, using Clear Voice Noise Reduction Technology.

⑳ Microphone Speaker
The same audio heard through internal radio speaker is heard through microphone speaker.

㉑ [**UP(▲)**] / [**DOWN(▼)**] Keys
The [**UP(▲)**] and [**DOWN(▼)**] on the microphone function the same as the **CH** knob on the front panel of the transceiver.

㉒ [**16/9**] Key
Pressing the [**16/9**] key immediately recalls channel 16 from any location. Press and hold the [**16/9**] key to recall channel 9. Pressing the [**16/9**] key again will revert the radio to the previous selected channel.

10 BASIC OPERATION

10.1   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).

10.2   RECEPTION

1. After the transceiver has been installed, ensure that the power supply and antenna are properly connected.
2. Press and hold the **PWR/VOL** knob until the radio turns on.
3. Turn the **SQL** knob fully counterclockwise. This state is known as "squelch off".
4. Turn up the **PWR/VOL** knob 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."
6. Turn the **CH** knob to select the desired channel. Refer to the channel chart on page for available channels.
7. When a message is received, adjust the volume to the desired listening level. The " BUSY " indicator in the LCD is displayed indicating that the channel is being used.

10.3   TRANSMISSION

1. Perform steps 1 through 6 of RECEPTION.
2. Before transmitting, monitor the channel to ensure it is clear.
   THIS IS AN FCC REQUIREMENT!
3. Press the **PTT** (push-to-talk) switch. The " TX " indicator on the LCD is displayed.
4. Speak slowly and clearly into the microphone.
5. When the transmission is finished, release the **PTT** switch.

<div align="center">NOTE</div>

This is a noise-canceling microphone. Position the Oval Slot label "**MIC**" within 1 inch (2.5 cm) from the mouth for optimum performance.

10.4 TRANSMIT TIME - OUT TIMER (TOT)

When the **PTT** switch on the microphone is held down, transmit time is limited to 5 minutes. This limits unintentional transmissions due to a stuck microphone. About 10 seconds before automatic transmitter shutdown, a warning beep will be heard from the speaker(s). 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.

10.5 SIMPLEX/DUPLEX CHANNEL USE

Refer to the VHF MARINE CHANNEL CHART (page) for instructions on use of simplex and duplex channels.

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.

10.6 USA, CANADA, AND INTERNATIONAL MODE

1. To change the Channel Group, hold the [**16/9**] key and press the [**WX**] key. The mode changes from USA to International to Canadian with each press of the [**CLR**(**WX**)] key.
2. "**USA**" will be displayed on the LCD for USA mode, "**INTL**" will be displayed for International mode, and "**CAN**" will be displayed for Canadian mode.
3. Refer to the VHF MARINE CHANNEL CHART (page) for allocated channels in each mode.

10.7 NOAA WEATHER CHANNELS

1. To receive a NOAA weather channel, press and hold the [**CLR**(**WX**)] key for 2 seconds from any channel. The transceiver will go to the last selected weather channel.
2. Turn the **CH** knob on the radio or [**UP**(▲)] / [**DOWN**(▼)] keys on the microphone to select a different NOAA weather channel.
3. To exit from the NOAA weather channels, press the [**CLR**(**WX**)] key. The transceiver returns to the channel it was on prior to a weather channel.

10.7.1 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. When the Weather Alert feature is enabled (see section "**12.11 WX ALERT**"), the transceiver is capable of receiving this alert if the following is performed:

1. Program NOAA weather channels into the transceiver's memory for scanning. Follow the same procedure as for regular channels under section "**10.13.2 Memory Scanning (M-SCAN).**"
2. Press the [**SCAN**] key once to start memory scanning.
3. The programmed NOAA weather channels will be scanned along with the regular-programmed channels. However, scanning will not stop on a normal weather broadcast unless a NOAA alert is received.
4. When an alert is received on a NOAA weather channel, scanning will stop and the transceiver will emit a loud beep to alert the user of a NOAA broadcast.
5. Press the [**CLR(WX)**] key to stop the alert tone and receive the weather report.

NOTE

If the [**CLR(WX)**] key is not pressed the alert tone will be emitted for 5 minutes and then the weather report will be received.

NOTE

The Weather Alert feature is also engaged while the transceiver is receiving on one of the NOAA weather channels.

10.7.2 NOAA Weather Alert Testing

NOAA tests the alert system ever Wednesday between 11AM and 1PM. To test the **GX2000/GX2100**'s NOAA Weather feature, on Wednesday between 11AM and 1PM, setup as in section "**10.7.1 NOAA Weather Alert**" and confirm the alert is heard.

10.8   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.

10.9   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-to-talk (**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.

10.10 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.

10.11 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 page 23 (H/L key) for means to temporarily override the low-power limit on these two channels.

10.12 DUAL WATCH (TO CHANNEL 16)

1. Adjust the **SQL** knob until the background noise disappears.
2. Select the channel you wish to dual watch to CH16.
3. Press the [**DW**(**IC**)] key. The display will scan between CH16 and the channel that was selected in step 2.
   If a transmission is received on the channel selected in step 2, the **GX2000/GX2100** will dual watch to CH16.
4. To stop Dual Watch press the [**DW**(**IC**)] key again.

10.13 SCANNING

Allows the user to select the scan type from Memory scan or Priority scan. "Memory scan" scans the channels that were programmed into memory. "Priority scan" scans the channels programmed in memory with the priority channel.

10.13.1 Selecting the Scan Type

1. Press and hold down the [**CALL**(**MENU**)] key until "Setup Menu" appears.
2. Press the **CH** knob, then select "CH Function Setup" with the **CH** knob.
3. Press the **CH** knob, then select "SCAN Type" with the **CH** knob.
4. Press the **CH** knob.
5. Turn the **CH** knob to select "Priority SCAN" or "Memory SCAN."
6. Press the **CH** knob to store the selected setting.
7. Press the [**CLR**(**WX**)] key several times to return to radio operation.

```
     -Setup Menu-
→Radio Setup
 DSC Setup



Set>[ENT], Clear>[CLR]
```

```
    -Radio Setup-
 Time Offset         ▲
 Time Display
 SOG Unit
 Magnetic
 Priority CH
→SCAN Type          ▼
Set>[ENT], Clear>[CLR]
```

```
    -SCAN Type-
→Priority SCAN
 Memory SCAN



Set>[ENT], Clear>[CLR]
```

10.13.2 Memory Scanning (M-SCAN)

1. Adjust the **SQL** knob until background noise disappears.
2. Select a desired channel to be scanned using the **CH** knob.
3. Press the one of the Programmable key momentarily to indicate these function on the LCD, then press and hold the [**SCAN**] key until "**MEM**" appears on the LCD which indicates the channel has been programmed into the transceivers memory.

```
  25W USA      MEM  [◄►]

        06
Loc 12:45PM
33° 97.125N
118° 09.587W    SAFETY
```

4. Repeat steps 2 and 3 for all the desired channels to be scanned.
5. To DELETE a channel from the transceiver's memory, select the channel then press and hold the [**SCAN**] key until "**MEM**" disappears from the LCD.
6. To start scanning, press the [**SCAN**] key momentarily. "M-SCAN" appears on the LCD. Scanning will proceed from the lowest to the highest programmed channel number and will stop on a channel when a transmission is received.

```
  25W USA      MEM  [◄►]
M-SCAN
        06
Loc 12:45PM
33° 97.125N
118° 09.587W    SAFETY
```

7. The channel number will blink during reception.
8. To stop scanning, press the [**16/9**] or [**CLR**(**WX**)] key.

10.13.3 Priority Scanning (P-SCAN)

In the default setting, Channel 16 is set as the priority channel. You may change the priority channel to the desired channel from the Channel 16 by the Radio Setup Mode, refer to section "**12.7 PRIORITY CHANNEL SET**."

1. Adjust the **SQL** knob until background noise disappears.
2. Select a desired channel to be scanned using the **CH** knob.
3. Press the one of the Programmable key momentarily to indicate these function on the LCD, then press and hold the [**SCAN**] key for one second, "**MEM**" will appear on the display which indicates the channel has been programmed into the transceivers memory.
4. Repeat steps 2 and 3 for all the desired channels to be scanned.
5. To DELETE a channel from the transceiver's memory, select the channel then press and hold the [**SCAN**] key until "**MEM**" disappears from the LCD.
6. To start priority scanning, press the [**SCAN**] key momentarily. "P-SCAN" appears on the LCD. Scanning will proceed between the memorized channels and the priority channel. The priority channel will be scanned after each programmed channel.
7. To stop scanning, press the [**16/9**] or [**WX**] key.
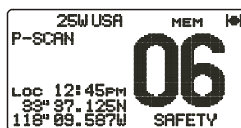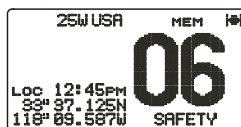
You may change the scan resume time in the Radio Setup Mode, refer to section "**12.9 SCAN RESUME TIME**."

10.14 AIS OPERATION

The **GX2000** is equipped with an AIS (Automatic Identification System) receiver and can display the its received data on the display. Therefore, you identify and avoid other large vessels nearby your vessel.

The **GX2100** also can display the received data on the display if you connect the AIS receiver (not prepared) to the Accessory Connection Cable.

1. Press the [**AIS**] key to appear the AIS screen. The LCD displays apparent vessel which equipped the AIS.
2. Press the one of the Programmable key momentarily to indicate these function on the LCD, then press the [**LIST**] key to appear the MMSI number of the vessels which displayed on the LCD.
3. Turn the **CH** knob to select the MMIS number, then press the [**INFO**] key to show more information of that station.
4. If you wish to contact (Individual Call) that station, press the [**CALL**] key, then turn the **CH** knob to select the operating channel you want to communicate on and press the **CH** knob.
5. Press the **CH** knob again to transmit the individual DSC signal. See page ?? for details regarding the "Individual Call" operation.
6. Press the [**QUIT**] key to return to radio screen.

10.15 PA/FOG OPERATION

The **GX2000/GX2100** has a 30W Hailer built-in and can be used with any 4 Ohm PA Horns. Standard Horizon offers a small and a large PA horn called the 220SW and 240SW. When in Hail mode the PA speaker Listen's Back (acts as a microphone and sends sound to the front panel speaker and the speaker mic) through the PA horn speaker which provides two-way communications through the PA horn speaker.

NOTE

When in PA or FOG mode the **GX2000/GX2100** will receive on the last selected VHF channel before entering into the PA or FOG mode and receive DSC calls.

PA HAIL mode:

PA HAIL mode allows the transceiver to be used as a power hailer when an optional STANDARD HORIZON 220SW or 240SW HAIL/PA speaker is installed. The Hail mode has a listen-back feature which provides two way communication through the HAIL/PA speaker.

FOG HORN mode:

Automatic signaling is transmitted through the HAIL/PA speaker. When the Fog horn, Bells or Whistle signal is not being outputted the **GX2000/GX2100** listens back through the connected PA Horn speaker.

10.15.1 Operating the PA HAIL mode

1. Press the [**PA**] key, then select "**PA**" with the **CH** knob.
2. Press the **CH** knob.
3. Press the **PTT** switch to speak through the HAIL/PA speaker.
    Turn the **CH** knob to control the AF output level. The AF output level can be set from 0 to 30 watts.
4. When the fog signal is not outputted, turn the **PWR/VOL** knob to adjust listen back volume.
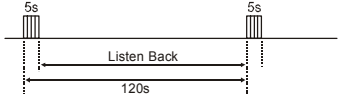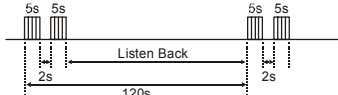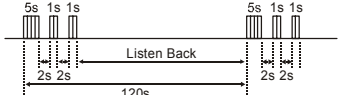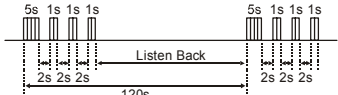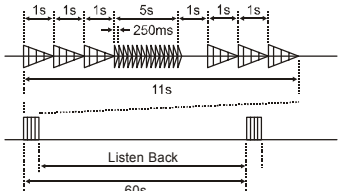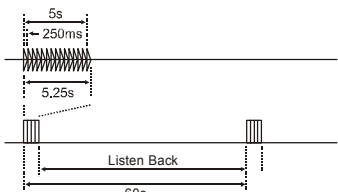5. To exit the PA HAIL mode, press the [**CLR**(**WX**)] key.
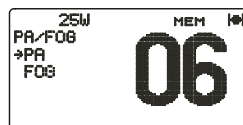
10.15.2 Operating the FOG HORN mode

Operator can select from "Underway", "Stop", "Sail", "Tow", "Aground", "Anchor", "Horn", and "Siren".

1. Press the [**PA**] key, then select "**Fog**" with the **CH** knob.
2. Press the **CH** knob.
3. Turn the **CH** knob to select one of the eight functions described above.
4. Press the **CH** knob.
5. On the "**Horn**" and "**Siren**" modes, press the **PTT** switch to activate the tone (fog signal) through the HAIL/PA speaker.
   Turn the **CH** knob to control the AF output level. The AF output level can be set from 0 to 30 watts.
6. When the fog signal is not outputted, turn the **PWR/VOL** knob to adjust listen back volume.
7. To exit the FOG HORN mode, press the [**CLR**(**WX**)] key.

TYPE	PATTERN	USAGE
UNDERWAY	One 5-second blasts every 120 seconds.	Motor vessel underway and making way.
STOP	Two 5-second blasts (separated by 2 seconds) every 120 seconds.	Motor vessel underway but stopped (not making way).
SAIL	One 5-second blasts followed by two 1-second blasts (separated by 2 seconds) every 120 seconds.	Sailing vessel underway, fishing vessel (underway or anchored), vessel not under command, a vessel restricted in her ability to maneuver (underway or at anchor), or a vessel towing or pushing another ahead.
TOW	One 5-second blasts followed by three 1-second blasts (separated by 2 seconds) every 120 seconds.	Vessel under tow (manned).
AGROUND	One 11-second rings every 60 seconds.	Vessel is aground.
ANCHOR	One 5-second rings every 60 seconds.	Vessel is at anchor.

10.16 INTERCOM OPERATION

Connecting a **CMP30** (**RAM3**) Remote Station Microphone or **VH-310** Handset to the **GX2000/GX2100** allows intercom communications. Refer to section "**13.2 INTERCOM OPERATION**" for **CMP30** (**RAM3**) Remote Station Microphone or section "**14.2 INTERCOM OPERATION**" for **VH-310** Handset.
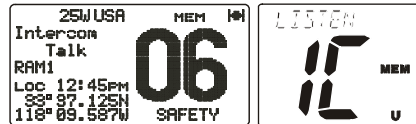
10.16.1 Communication

1. Press the [**IC**] key while in the "Radio" mode, the mode is changed to "Intercom" mode.
2. When the "Intercom" operation is activated, "Intercom" is displayed on the **GX2000/GX2100**, and "**IC**" is displayed on the **CMP25** RAM+ or **VH-310** Handset.
3. Press the **PTT** switch. "Talk" will be shown on the display.
   NOTE: A warning beep will be emitted when the **GX5000S** microphone's **PTT** switch is pressed while the RAM+ Mic's **PTT** switch is pressed.
4. Speak slowly and clearly into the microphone, hold the microphone about 1/2 inch away from your mouth.
5. When finished, release the **PTT** switch.
6. Press the [**DW**(**IC**)] key the mode will revert to "Radio" mode.
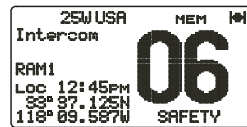
10.16.2 Calling

Hold down the [**DW**(**IC**)] key when the "Intercom" mode is activated to send a calling beep to the RAM+ or **VH-310** remote mic.

(**GX5000S**'s **PTT** switch is pressed)

(Second Station Mic's **PTT** switch is pressed)

10.17 VOICE SCRAMBLER

If privacy of communications is desired, a **CVS2500** 4 code voice scrambler (VS) can be installed in the transceiver. Contact your Dealer to have a **CVS2500** installed. Refer to the section "**12.17 VOICE SCRAMBLER**" to program the voice scrambler.

1. Select a channel that was programmed for scrambler mode ("**VS**" and scrambler number will appear on the LCD).

2. Monitor the channel before transmitting.
3. Transmit the voice message. The signal sent will be scrambled.

STANDARD HORIZON
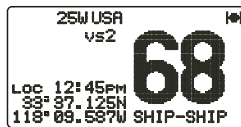
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