Ray49
Marine VHF Radio
Owner's Handbook

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Contents

About this Handbook

Intended Use

This handbook describes the Ray49 fixed VHF marine radio. The Ray49 provides two-way communications on all US, Canadian and International marine channels and weather watch on ten weather channels. The Ray49 includes equipment for Class "D" Digital Selective Calling (DSC).

Conventions Used

Throughout this handbook, the dedicated (labelled) keys are shown in bold capitals (for example: **MENU/DSC**). The LCD indicators and functions are shown in normal capitals (for example: TX).

Technical Accuracy

To the best of our knowledge, the information in this handbook was correct as it went to press. However, our policy of continuous product improvement and updating may change specifications without prior notice. As a result, unavoidable differences between the product and handbook may occur from time to time. Raymarine cannot accept liability for inaccuracies or omissions it may contain.

For the latest handbook revisions and product information visit our web site:

www.raymarine.com

Warranty

To register your new Raymarine product, please take a few minutes to fill out the warranty registration card found at the end of this handbook. It is very important that you complete the owner information and return the card to the factory in order to receive full warranty benefits.

Important Information

Raymarine radios comply with the Federal Communications Commission (FCC) and Industry Canada requirements that regulate marine VHF radio usage for the US and Canada, respectively. Marine VHF radio users in the US must comply with all applicable FCC rules and regulations, some of which are described in this handbook.

This information was current at the time this handbook was printed. Up-to-date information, including licensing requirements, can be obtained on the FCC web site at:

www.fcc.gov/wtb/marine

Official FCC forms can be obtained on the FCC web site at:

www.fcc.gov/formpage.html

FCC Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this equipment not expressly approved in writing by Raymarine, Incorporated could violate compliance with FCC rules and void the operator's authority to operate the equipment.

Station License

An FCC Ship Radio Station License and Call Sign are not required for most recreational vessels travelling in US waters. However, you must obtain a license if your vessel travels to foreign ports.

Ships that use MF/HF single side-band radio, satellite communications, or telegraphy must be licensed by the FCC. You can obtain a Station License by filing FCC Form 605, which is available from the FCC web site listed above.

Operator License

An Operator License is not required to operate a VHF Marine Radio within US territorial waters. However, a license is required to operate the radio if you dock in a foreign port (including Canada and Mexico) or leave a foreign port to dock in a U.S. port. You can request a Restricted Radiotelephone Operator Permit from the FCC by filing Form 753.

Industry Canada Notice

This Class B digital apparatus complies with Canadian ICES-003. To obtain Industry Canada information on RF exposure (RSS-102) and compliance, please refer to the Industry Canada web site:

www.ic.gc.ca

License

You do not need a license to operate this radio in a registered vessel within sovereign waters of Canada or the US. Owners of unregistered vessels should contact Industry Canada for advice. You will need a license to operate this radio outside of Canada or the US. To obtain Industry Canada licensing information or to locate the nearest field or regional office, refer to the Industry Canada web site:

www.ic.gc.ca

The following information is required to complete the license application:

Industry Canada Certification Number: 4069A-RAY49 D
FCC Type Number: PJ5RAY49
FCC Type Accepted: Parts 15 and 80
Output Power: 1 watt (low) & 25 watts (high)
Modulation: FM (16K0G3E), DSC (16K0G2B)
Frequency Range: 156.025–157.425

Outside the US and Canada

Outside the US and Canada, please check your national requirements for both operators and equipment licensing.

Maritime Mobile Service Identity (MMSI)

The Ray49 includes equipment for Class "D" Digital Selective Calling (DSC). A nine-digit Maritime Mobile Service Identity (MMSI) number is required to operate the DSC equipment.

You can request an MMSI number from the FCC when you apply for a Station License. If your vessel does not require a license, you may obtain an MMSI by contacting BoatUS (www.boatus.com). Once obtained, you can program the MMSI number into your Ray49 as described in this handbook.

Safety Notices

Your Raymarine VHF radio generates and radiates radio frequency (RF) electromagnetic energy (EME). This equipment must be installed and operated in accordance with the instructions contained in this handbook. Failure to do so can result in personal injury and/or product malfunction.

Antenna Mounting and EME Exposure

For optimal radio performance and minimal human exposure to radio frequency electromagnetic energy, make sure the antenna is:

- located at least 1.5 meters (5 feet) from the radio
- connected to the radio before transmitting

This system has a Maximum Permissible Exposure (MPE) Radius of 1.5 meters, assuming the maximum power of the radio and antennas with a maximum gain of 3dBi. Accounting for the height of an average adult (2 meters) the minimum height of the antenna above the deck to meet RF exposure compliance requirements is 3.5 meters. Antennas with more gain require a greater MPE radius. Do not transmit when anyone is within the MPE radius of the antenna, unless shielded from the antenna field by a grounded metallic barrier.

WARNING: Maximum Permissible Exposure
Failure to observe these guidelines may expose those within the maximum permissible exposure (MPE) radius to RF radiation absorption that exceeds the MPE limit. It is the operator's responsibility to ensure that no one comes within this radius.

WARNING: Microwave Radiation
Operators with cardiac pacemakers, electric-medical equipment and life support machines should not be exposed to microwave radiation.

CAUTION: Antenna Connection
Never operate the radio unless it is connected to the antenna.

Safe Compass Distance

Safe Compass Distance is 1 meter for a common compass. To be sure, you should locate the radio as far as possible from the compass. Test your compass to verify proper operation while the radio is also operating.

EMC Conformance

All Raymarine equipment and accessories are designed to the best industry standards for use in the recreational marine environment. Their design and manufacture conform to the appropriate Electromagnetic Compatibility (EMC) standards but correct installation and use is required to ensure that performance is not compromised.

Duty Cycle

The normal duty cycle of the Ray 49 is 5% transmit, 5% receive, and 90% standby.

Chapter 1: Introduction

1.1 Ray49 Fixed Station VHF Radios

The Ray49 marine VHF radiotelephone is a microprocessor-controlled radio that provides reliable simplex (single frequency) and semi-duplex (two frequency) communications. This handbook describes the physical and functional characteristics of this radio.

The Ray49 provides two-way communications on all US, Canadian and International marine channels and ten weather channels. Refer to the Frequency Tables in Appendix D, which list all marine VHF channels available in your radio. You should familiarize yourself with these tables to ensure proper channel usage.

1.2 Features

The Ray49 is designed and manufactured to provide ease of operation with excellent reliability. The Ray49 has many enhanced features, including:

- Waterproof to IPX-7 standard
- Anti-glare 1.9" x 1.3"(48mm x 32mm) LCD
- 10 Weather Channel watch with 1050Hz Alert Tone detect
- Dedicated key for switching to Priority Channel 16
- Programmable Secondary Priority Channel key
- All Scan, Memory Scan and 2 Priority Scan functions
- Dual/Tri Watch Monitor modes

- Local Mode decreases noise in areas where RF interference is high
- Enhanced GPS Position Data gives Latitude and Longitude to 1/10,000 of a minute plus Time, SOG and COG data from any NMEA input
- Automatically distinguishes between calls made to Ship or Coast Stations
- Low and High Voltage detection with alert
- Editable Channel Name
- 10 Brightness and Contrast settings

Digital Selective Calling (DSC)

The Ray49 includes equipment for Class "D" Digital Selective Calling (DSC). DSC protocol is a globally applied system used to send and receive digital calls. DSC uses a unique Maritime Mobile Service Identity (MMSI) number to direct DSC calls directly to your radio, much like a telephone number. Most importantly, DSC enables digital distress calls that automatically notify other ships and shore stations where you are and that you are in a distress situation.

Note: *An MMSI ID number is required to operate the DSC equipment in this radio. You can obtain an MMSI from BoatUS (www.boatus.com). Once obtained, you can program the MMSI number yourself one time only using the menu operation described in "My MMSI ID" on page 81.*

The Ray49 includes the following DSC features:

- Separate receiver dedicated to handling DSC Calls on channel 70
- Position Request function sends GPS position data to or receives position data from other stations
- Phonebook for automatically making DSC calls
- Quick call features sends Individual Calls directly from the Received Calls log, just like the call back function on a telephone
- Three Group IDs for making DSC Calls only to stations in your group, such as a flotilla or fishing fleet

DSC functions are fully described in Chapter 5.

Chapter 2: Installation

2.1 Unpacking and Inspection

Use care when unpacking the unit from the shipping carton to prevent damage to the contents. It is also good practice to save the carton and the interior packing material in the event you must return the unit to the factory.

Removing the Sun Cover

The Sun Cover was designed to fit snugly on the radio, even while the boat is being transported.

To remove the Sun Cover:

1. Place your thumb in the dimple and push downward.
2. At the same time, pull up the lift tab with your index finger.
3. Pinch your fingers towards each other as you lift up.

D10529-1
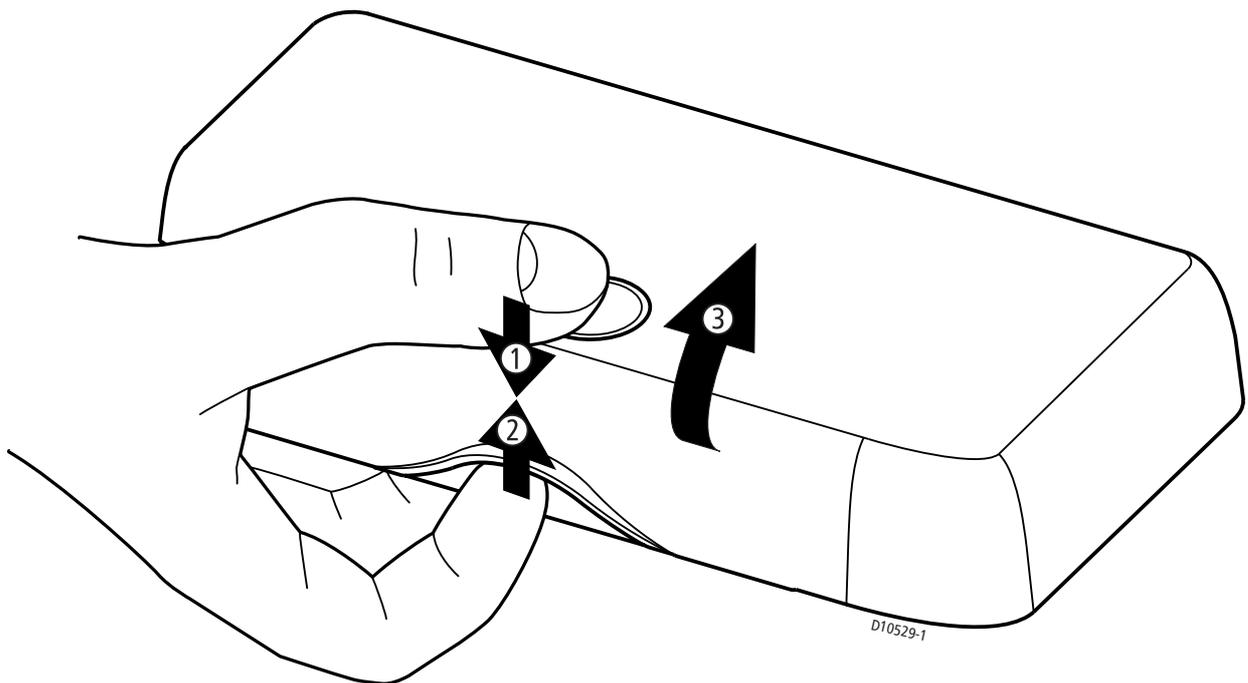
Equipment Supplied

The Ray49 comes in two colors: gray and white. The following is a list of materials supplied with each model.

Ray49 Gray

Part No	Description
E43034	Ray49 (gray) VHF Radio
R49216	Sun Cover (gray) for Ray49
R49218	Mounting Bracket for Ray49
R49165	Bracket Knob for Ray218/Ray55/Ray49
R49166	Microphone Hanger for ay218/Ray55/Ray49
R49167	Power Cord for Ray218/Ray55/Ray49
81296	Handbook for Ray49
	Screws (x5) for Mounting Bracket/Microphone Hanger
	Screw/Lock Washer (x1) for Grounding
OPTIONAL:	
A46053	Rear Flush Mount Kit for Ray218/Ray55/Ray49
E46006	10W External Speaker

Ray49 White

Part No	Description
E43038	Ray49 (white) VHF Radio
R49217	Sun Cover (white) for Ray49
R49218	Mounting Bracket for Ray49
R49165	Bracket Knob for Ray218/Ray55/Ray49
R49166	Microphone Hanger for Ray218/Ray55/Ray49
R49167	Power Cord for Ray218/Ray55/Ray49
81296	Handbook for Ray49
	Screws (x5) for Mounting Bracket/Microphone Hanger
	Screw/Lock Washer (x1) for Grounding
OPTIONAL:	
A46053	Rear Flush Mount Kit for Ray218/Ray55/Ray49
E46006	10W External Speaker

2.2 Planning the Installation

Mount the transceiver to allow easy access from the location where the boat is normally navigated. Select a location that is non-metallic, dry, protected, well-ventilated, and free from high operating temperatures and excessive vibration. Provide sufficient space behind the transceiver to allow for proper cable connections to the rear panel connectors. Locate the transceiver as near as possible to the power source yet as far apart as possible from any devices that may cause interference such as motors, generators, and other on board electronics. The radio should be protected from prolonged direct exposure to rain and salt spray.

The Ray49 is not designed to be mounted in engine compartments. Do not install the radio in a location where there may be flammable vapors (such as in an engine room or compartment, or in a fuel tank bay), water splash or spray from bilges or hatches, where it is at risk from physical damage from heavy items (such as hatch covers, tool boxes, etc.), or where it might be covered by other equipment.

Locate the radio at least 1.5 meters from the antenna.

Safe Compass Distance is 1 meter for a common compass. To be sure, you should locate the radio as far as possible from the compass. Test your compass to verify proper operation while the radio is also operating.

The Ray49 can be conveniently mounted on a chart table, bulkhead, overhead, or any other desired location. Refer to the following figure for typical mounting methods.

Table top mount   Bulkhead mount   Overhead mount
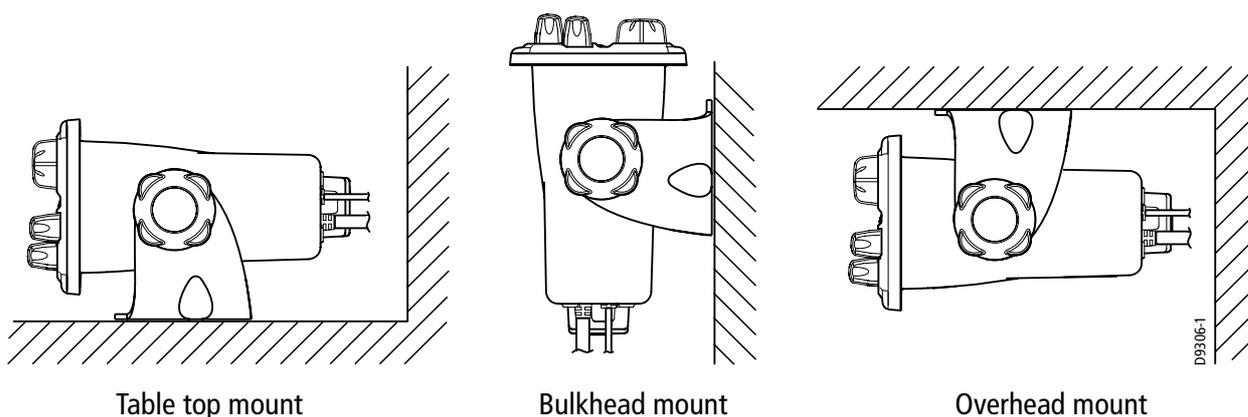
The Ray49 may also be flush mounted using the optional A46053 Rear Flush Mount Kit, available from your Raymarine dealer. Instructions for installing the radio using the Flush Mount Kit are included with the kit.

7.05 in (179mm)

5.43 in (138mm)

4.96 in (126mm)

top

6.89 in (175mm)

6.57 in (167mm)

3.02 in (76.8mm)

1.57 in (40 mm)

1.72 in (43.7mm)

bottom

3.45 in (87.7mm)

3.56 in (90.3mm)

5.93 in (150.7mm)

5.12 in (130mm)

1.77 in (45mm)

2.87 in (73mm)

2.29 in (58.1mm)

0.68 in (17.3mm)
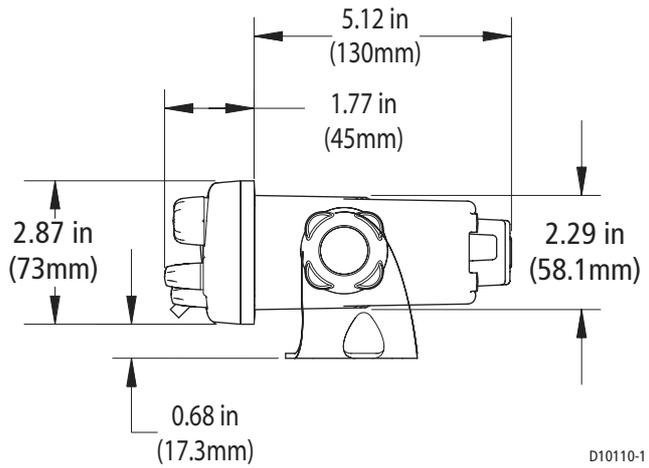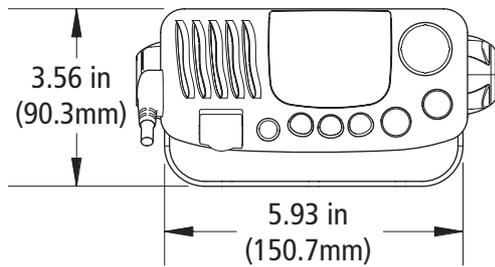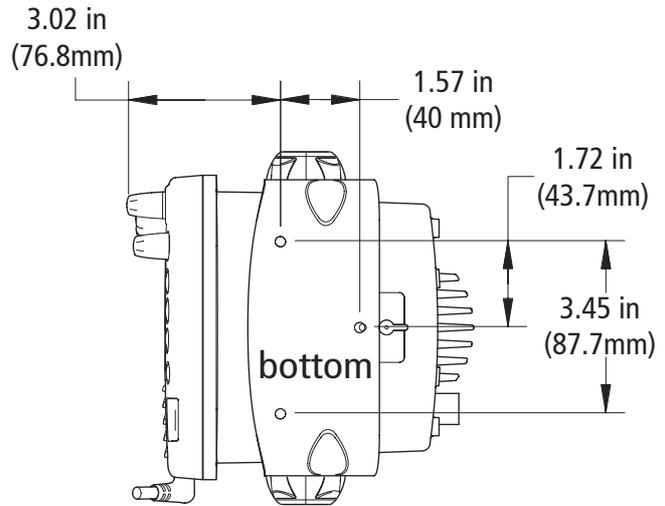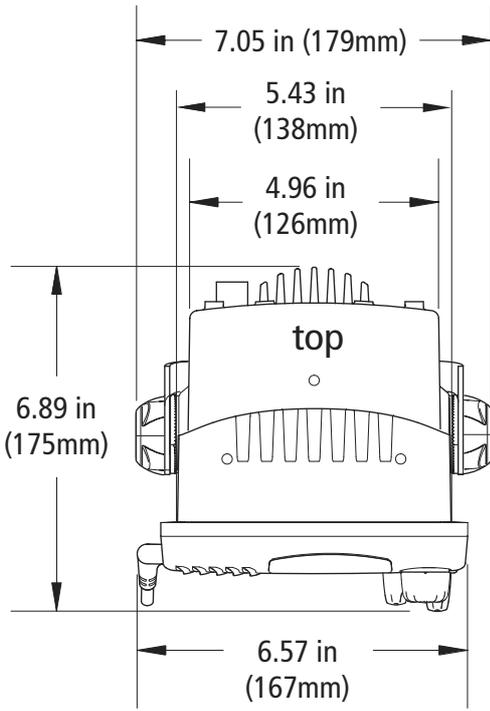
D10110-1

2.3   Cable Connections

The radio has 2 bullet connectors for the extended power cord, a 4-wire cable for NMEA connections, and a 2-wire cable for an optional external speaker. Connect the wires as shown in the following table. Other connections are discussed in the ensuing sections.

Color	Signal	Connects to
Gray Purple	NMEA IN + NMEA IN –	GPS
Blue Brown	NMEA OUT + NMEA OUT –	Chartplotter display unit (A Series, C Series, etc.)
Yellow Green	SPEAKER + SPEAKER –	Optional remote speaker, Raymarine part no. E46006

Make cable connections as shown in the figures that follow.
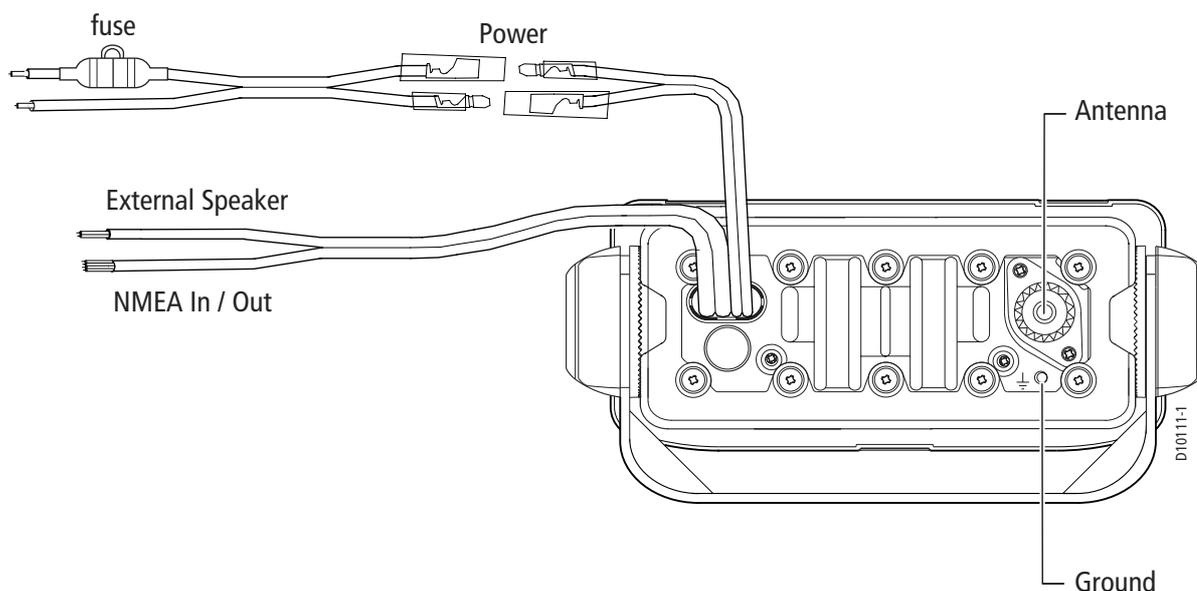
The ends of the external speaker wires are clipped at the factory so that no bare metal is exposed. You must strip back the insulation before installation. If you are not connecting an external speaker, leave the wires insulated. If you have stripped back a wire that you will not be connecting, clip the bare wire down to the insulation.

Power

The red and black Power Cord provides connection to DC power. Slide the bullet connectors on the cord into their mates (with the same colored wire) on the rear of the radio. Connect the stripped wires on the Power Cord to the nearest primary source of the boat's DC power. A suitable source would be a circuit breaker on the power panel or a fuse block near the unit, rated at 10 amps. Connect the red wire to the positive terminal of the power source and the black wire to the negative (ground) of the power source. The red (+) wire contains an in-line fuse rated at 10A, 250V, slow-blow. If the fuse ever needs to be replaced, be sure to use the same type and rating.

The power cord must be long enough to reach the DC power source. If additional wire length is required, the cable can be extended by adding more cable as necessary. However, for power cable runs longer than 15 feet, larger wire diameter size should be used to prevent voltage line loss. To ensure adequate current draw to the equipment, Raymarine recommends that you use lugs to connect the power cable to the DC supply and that the lug connections be both crimped and soldered.

The Ray49 is designed to be operated on a 12 volt (nominal) system. If battery voltage drops below 10.5 VDC, ▪▪▪ BATTERY LOW appears on the LCD. Discontinue using the radio if a low voltage condition occurs as performance would be unreliable. If voltage increases to 15.8 VDC, ▪▪▪ BATTERY HIGH appears.

External Speaker

Connect the yellow(+) wire and green (–) wire to the speaker observing polarity as it is marked on the speaker.

NMEA Data

The Ray49 accepts NMEA 0183 (V3.01) data from a position determining device (GPS) to provide the Latitude and Longitude position information. This information appears on the radio's LCD display and is also transmitted during a DSC Distress Call. When a valid NMEA signal is detected, the "GPS" indicator appears on the LCD. When no NMEA signal is detected, the indicator shows "NO GPS".

Connect the NMEA OUT + and NMEA OUT – signals from the positioning device to the NMEA IN + (gray) and NMEA IN – (purple) wires, respectively, from the radio. An example of how to make the connections using a suitable connector block is shown in the following drawing. For specific instructions how to connect your particular GPS, please refer to the handbook that came with that device.

to Radio: from GPS:

NMEA IN + (gray)   NMEA OUT +

NMEA IN − (purple)   NMEA OUT −   D9308-2
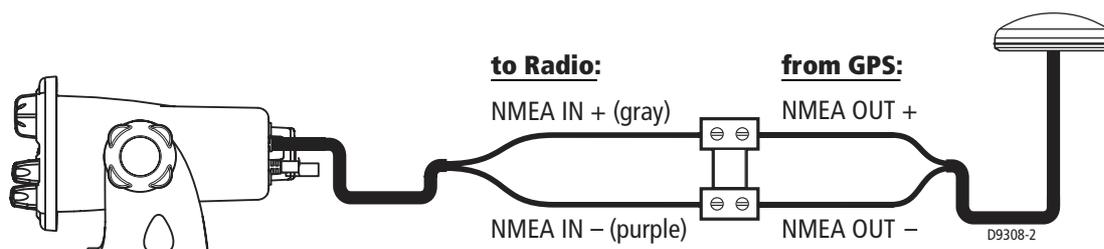
NMEA Alarm

When no valid position data is available, the NMEA alarm sounds (provided that the MMSI number has been programmed): the GPS satellite icon flashes and NO POS DATA is displayed on the dot matrix display. The alert tone sounds for 5 seconds or until you acknowledge it by pressing any key. The alarm repeats every four hours, as long as the condition exists.

If desired, you can manually enter time and position data using the GPS/Time Setup feature, as described on page 47. The alert repeats every four hours as long as no position information has been entered manually. If position data is entered manually but has not been updated during the previous 23.5 hours, all the position (lat/lon) fields are set to all 9's, time field is set to all 8's, and the display reverts to NO POS DATA.

Antenna

Raymarine recommends that you install a VHF Marine band antenna with a minimum height of 8 ft. and gain of at least 3 dBi.

The coaxial VHF antenna cable connects to the Ray49 antenna jack on the rear panel using a PL-259 VHF type connector. The antenna cable length can be critical to performance. If you are uncertain, contact a professional installer or call Raymarine Product Support. If a longer cable length is required, RG-8x (50 ohm) marine coaxial cable or equivalent cable can be used for runs up to a maximum of 50 feet. If the distance required is even greater, Raymarine recommends using low loss RG-213 or equivalent cable for the entire run to avoid excessive losses in power output.

If the antenna RF connector is likely to be exposed to the marine environment, a protective coating of silicon grease (Dow Corning DC-4 or similar) can be applied to the connector before connecting it to the radio. Any other extensions or adapters in the cable run should also be protected by grease and then wrapped with a waterproofing tape.

Antenna Mounting Suggestions

Mounting the VHF antenna properly is very important because it will directly affect the performance of your VHF radio. Use a VHF antenna designed for marine vessels. Since VHF transmission is essentially line-of-sight, mount the antenna at a location on the vessel that is free of obstruction to obtain maximum range.

If you must extend the length of the coaxial cable between the antenna and the radio, use a coaxial cable designed for the least amount of power loss over the entire cable length.

For optimal radio performance and minimal human exposure to radio frequency electromagnetic energy, make sure the antenna is:

- mounted as high as possible, but at least located at least 1.5 meters (5 feet) from the radio
- connected to the radio before transmitting

WARNING: Antenna Mounting and EME Exposure
Ensure that the antenna is mounted so that no one can enter the maximum permissible exposure radius for RF radiation. See the Safety Notice entitled "Antenna Mounting and EME Exposure" on page 12.

Grounding

While special grounding is not generally required for VHF radiotelephone installations, it is good marine practice to properly ground all electronic equipment to the boat's earth ground system. The Ray49 can be connected to ground by installing the supplied screw and lock washer into the threaded hole labelled with the ⏚ icon, located on the transceiver's rear panel, adjacent to the antenna jack. Then attach a #10 AWG wire from this screw to the nearest ship's earth ground connection point.

CAUTION: Do not connect this ground connection to the negative terminal of the battery.

Chapter 3: General Operations

3.1 Keypad and Rotary Knobs

Several of the keys on the front panel of the transceiver serve multiple purposes. For the most part, the function indicated on the first line of the key is accessed by pressing that key for fewer than 3 seconds and then releasing it. The function indicated on the second line of the key is accessed by pressing and holding the key for greater than 3 seconds.
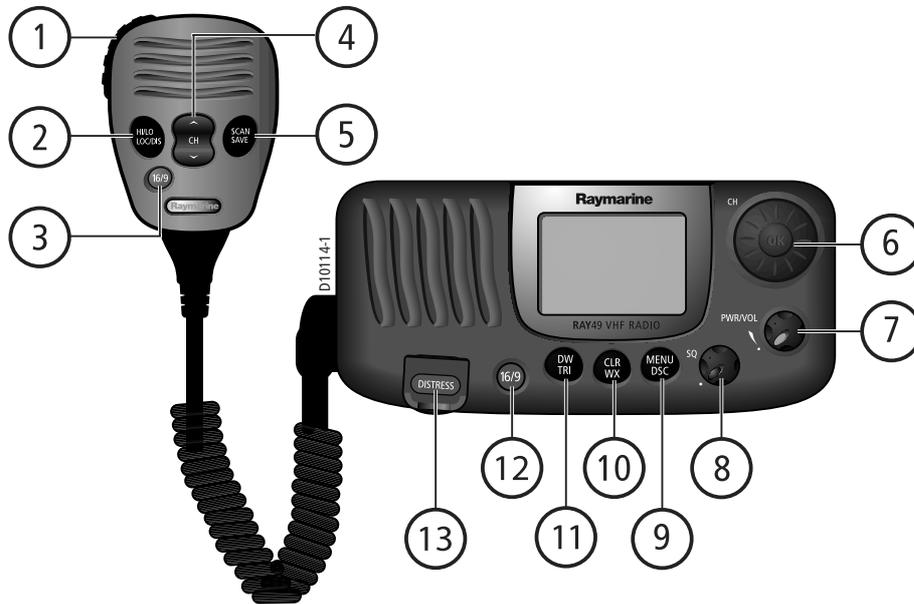
Microphone Keys

1. PTT

Press this Push-to-Talk key to transmit.

2. HILO / LOC DIST

Press and release to toggle the transmit power from HI to LO. Can also be used to select items in menu mode. Press and hold to toggle between full receiver sensitivity (Distant mode) and attenuated receiver sensitivity (Local mode).

3. 16/9

Use this key to switch to the Priority Channel, switch to the Secondary Priority Channel, or to change the value of the Secondary Priority Channel.

4. UP/DOWN

Use the arrow keys to change the active channel number. Press and hold for rapid channel changing. Can also be used to scroll through selections in menu and programming modes.

5. SCAN / SAVE

Press and release this key to access the Scan Mode menu, which is described on page 37. If Scan Mode is active, pressing this key terminates the scan. Press and hold for 3 seconds to enter a channel into the radio's memory. This function is described in "Saving Channels to Memory" on page 42.

Transceiver Controls

6. CH/OK

Rotate this knob to change the current channel number and to change values in Menu mode or during programming (CH). Press in to enter values selected in Menu mode or during programming (OK).

7. PWR/VOL

Use this knob to turn the radio ON and OFF and to set the volume.

8. SQ

Use this knob to set the squelch threshold, which cuts off the receiver when the signal is too weak for reception of anything but noise.

Transceiver Push Keys

9. MENU/DSC

Press and release this key to select Menu Mode, which is used to set up the radio. Menu operations are fully described in Chapter 4.

Press and hold for 3 seconds to enter DSC Call Mode, which is used for making DSC Calls and viewing the DSC Call Logs and the DSC Call Phonebook.

A Maritime Mobile Service Identity (MMSI) number is required to operate the DSC equipment in this radio. This number directs DSC calls directly to your radio, much like a telephone number. You can program the MMSI number yourself one time only using the operation described in "My MMSI ID" on page 81. Otherwise, your Raymarine dealer can program or change the number for you.

Full details on DSC call operation are described in Chapter 5.

10. CLR/WX

Press and release to terminate a function and return to the last-used channel. Press and hold for 3 seconds to select the Weather mode.

11. DW/TRI

Press and release to initiate Dual Watch mode. Press and hold for 3 seconds to initiate Tri Watch mode.

12. 16/9

Use this key to switch to the Priority Channel, switch to the Secondary Priority Channel, or to change the value of the Secondary Priority Channel.

13. DISTRESS

Push up the spring-loaded cover and press this key to make a DSC Distress Call. Instructions for making a Distress Call are described in Section 5.2.

3.2 Transceiver LCD

The following describes the function of the characters on the radio's LCD.

D10115-1
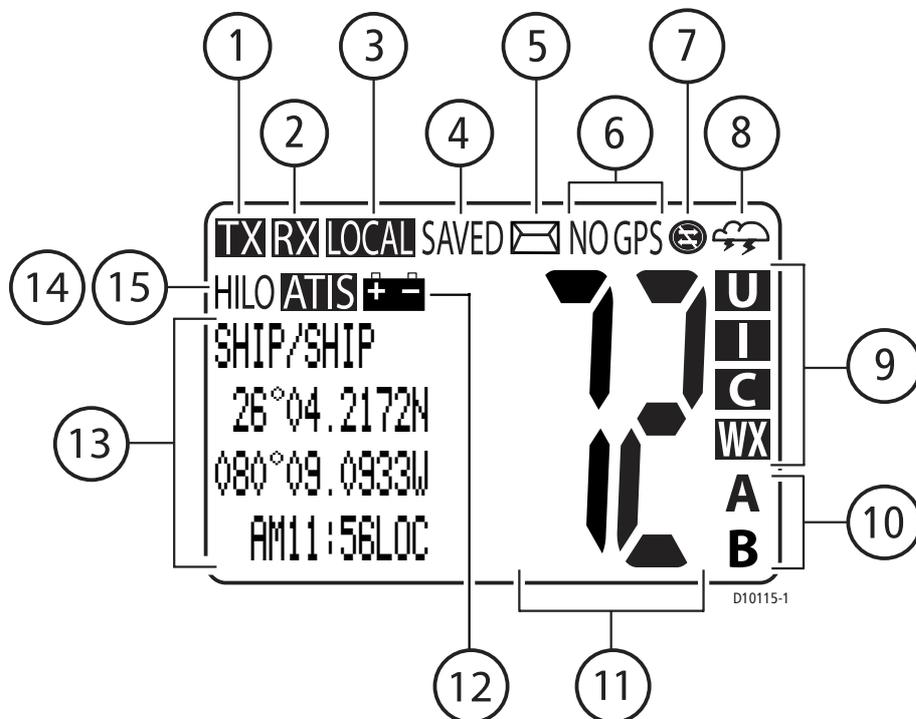
1. (TX) Transmitting

Indicates the **PTT** key is being pressed and the radio is transmitting.

2. (RX) Receiving

Indicates that the radio is receiving a radio signal.

3. (LOCAL) Local/Distant Mode

Indicates the radio is in Local Reception mode, which decreases receiver sensitivity in high traffic areas to decrease unwanted reception.

3. (HI/LO) TX Power

Indicates whether transmit power is set for 25 watts (HI) or 1 watt (LO).

4. (SAVED) Memory Mode

Indicates the current channel has been saved in memory. Appears during Saved (Memory) Scan and Priority Saved Scan modes.

5. ✉ DSC Call

When flashing, indicates that the radio has received a DSC Call. Details of the call can be viewed in the associated log. See "Received Calls (Logs)" on page 79. The icon disappears when the call is accepted, the call is rejected, or the associated message is viewed in the log.

6. (NO) GPS

"GPS" indicates that positional data is available. "NO GPS" indicates that positional data is not available.

7. 🚫 Automatic Channel Changing Blocked

Indicates that your radio will not automatically switch to the channel requested by an incoming DSC call but rather will prompt you to manually accept or decline the channel change request. Applies to Distress and All Ships Urgency calls only. This feature is controlled by the DSC Setup menu item AUTO CH CHG, described on page 84. By default, this icon is off, meaning that auto channel changing is active.

8. 🌧 Weather Alert

Indicates that the radio is monitoring for weather alert broadcasts.

9. (U, I, C, WX) Channel Set

Indicates which channel set is selected: U (USA), I (International), C (Canadian), or WX (Weather).

10. (A, B) Channel Status

A subscript character following the channel number indicates special qualities.

(A) Simplex Channel

The subscript **A** indicates that the currently-selected US or Canadian channel is simplex, although its International counterpart is semi-duplex (5A, for example). This channel uses the transmit frequency of the International channel for both transmitting and receiving. If a channel is simplex in all 3 channel sets (US, Canadian, and International—channel 6, for example), the **A** does not appear.

Note: *Simplex means that the radio transmits and receives on the same frequency for this channel. Semi-duplex channels use separate frequencies to transmit and receive.*

(B) Receive-only Channel

The subscript **B** indicates that you cannot transmit on the currently-selected channel; it is receive-only. Used with Canadian channels only.

11. Channel Number

Displays the current active channel number.

12. 🔋 Battery Voltage Alert

The Ray49E is designed to be operated on a 12 volt (nominal) system. If the boat's battery voltage drops below 10.5 VDC or increases above 15.8 VDC, the battery icon appears with the message BATTERY LOW or BATTERY HIGH, respectively.

13. Dot Matrix Display

Indicates radio functions, GPS position data or special conditions, depending on the situation. The screen is different when sending/receiving a DSC Call (see Chapter 5) or setting up a Menu item (see Chapter 4). The top line usually displays the current channel name. This field is editable.

14. (HI, LO) Transmit Power

Indicates whether radio tranmissions are being made at 25 watts (HI) or 1 watt (LO).

15. ATIS Active

Indicates ATIS transmission is enabled. This feature is only available in the Ray49E European version of the radio.

3.3   Turning the Power ON and OFF

PWR/VOL

Turn the **PWR/VOL** knob clockwise until it clicks.
When the unit powers up in standby mode it:

- Beeps, illuminates the backlight at full brightness, and displays a self-test.
- Recalls the last channel number, TX power settings and operation mode. If no last-used setting data exists, goes to channel 16 and high TX Power.
- When GPS Data is available, extended position data is displayed with the off-set time. This information will be displayed when display option for the position and time is enabled on the Menu. See Section 4.3.
- When the MMSI number is not programmed, you are prompted to enter the number as described on page 81. You must then press **CH/OK** to continue.

To turn the unit OFF, rotate the **PWR/VOL** knob completely counterclockwise until it clicks.

3.4   Setting the Volume

PWR/VOL

Adjust the **PWR/VOL** knob to control the loudspeaker volume level. Turn clockwise to increase the volume; counter clockwise to decrease the volume.

3.5   Setting the Squelch

SQ

The squelch circuit sets the threshold for cutting off the receiver when the signal is too weak for reception of anything but noise. To properly set the squelch, rotate the **SQ** knob counterclockwise until audio is heard. Then rotate clockwise until background noise disappears.

3.6   Tuning the Channel

CH
OK

...on the Transceiver

Rotate the **CH/OK** knob clockwise to increase the channel number.

Rotate the **CH/OK** knob counterclockwise to decrease the channel number.

CH

...on the Microphone

Press and release the UP arrow to increase the channel number.

Press and release the DOWN arrow to decrease the channel.

Press and hold either key for rapid channel scrolling.

3.7   Selecting a Weather Channel

The US National Oceanic and Atmospheric Administration (NOAA) broadcasts continuous weather reports and severe weather alerts, as needed. The Ray49 is programmed to receive 10 weather channels and sound an alarm if a weather alert is received.

To enter Weather mode, press and hold the **CLR/WX** key for 3 seconds on the transceiver.

PRESS and HOLD for 3 secs
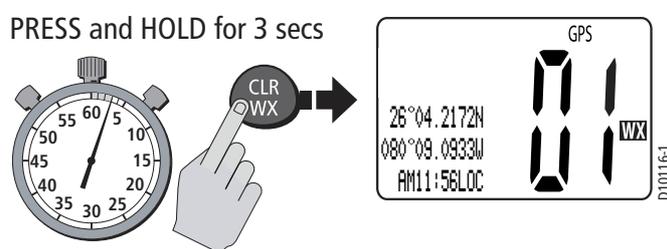
The WX indicator appears in the channel set field. Rotate the **CH/OK** knob on the transceiver or use the channel up /down keys on the microphone to select from channels WX01 through WX10.

Press and release the **CLR/WX** key again to return to normal operation.

Note:

- *WX broadcasts can only be heard in the US and Canada.*
- *During Weather mode, the PTT, HI/LO, and SCAN/SAVE keys are disabled and an error beep sounds if pressed.*

Weather Alert Operation

NOAA also broadcasts continuous severe weather alerts as needed. You can set your Ray49 to notify you when such an alert is issued. Press and hold the **CLR/WX** key to enter weather mode. Then, press and hold the **CLR/WX** key again to enable weather alert. The cloud icon appears.

PRESS and HOLD for 3 secs
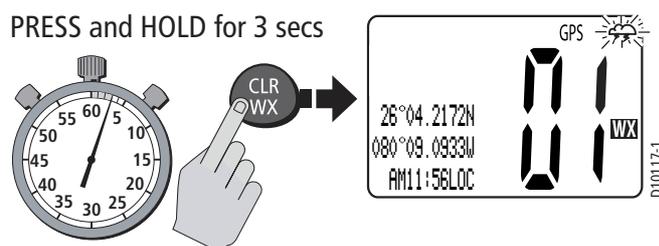
When the severe weather alert tone is detected, the message WX ALERT is displayed and an alarm sounds. The radio automatically tunes to the WX channel where the weather alert has been detected. The alert is detected in all modes of operation (Standby, Dual Watch, Tri Watch, Scan, etc.)

3.8   Selecting the Priority Channel

The Ray218/Ray55 provides you with a dedicated key for switching to the Priority Channel 16. Press and release the **16/9** key to switch to channel 16 at high power. The label 1ST PRIORITY appears. If already on channel 16, press and release **16/9** to return to the last-used working channel.

The **16/9** key also can be used to cancel all other modes and switch to channel 16.

Note: *When the priority channel is selected, the radio is always set to HIGH transmit power. You may reduce power if desired using the HI/LO power setting.*

3.9   Selecting the Secondary Priority Channel

The Ray218/Ray55 enables you to program the **16/9** key to store a Secondary Priority Channel. The default is channel 9. If on primary Priority channel 16 or a working channel, press and hold the **16/9** for 3 seconds to switch to the Secondary Priority Channel at high power. The label 2ND PRIORITY appears. The default is channel 9.
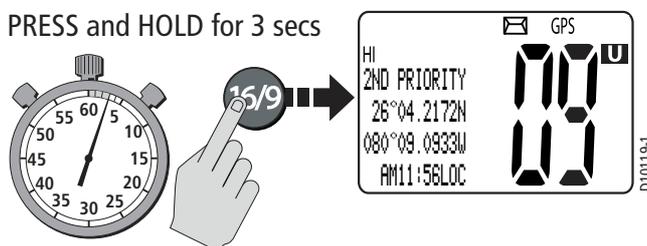
If already tuned to the Secondary Priority Channel, press and release the **16/9** key to switch to Priority Channel 16 at high power.

Reprograming Secondary Priority Channel

1. Press and hold the **16/9** key for 3 seconds to switch to the current Secondary Priority Channel.

2. Press and hold the **16/9** key for 3 seconds again to switch to Reprogram mode. The message CHG 2ND PRI? appears with YES highlighted.

3. Press the **CH/OK** knob to accept. The confirmation message CHANGE 2ND PRIORITY CH appears.

4. Rotate the **CH/OK** knob until the desired new secondary channel is shown.

5. Press **CH/OK** to accept the new Secondary Priority selection.

STEP 1

HOLD for 3 secs

```
                          GPS
HI
2ND PRIORITY
 26°04.2172N
080°09.0933W
  AM11:56LOC
```

STEP 2

HOLD for 3 secs

```
                          GPS
HI
CH 2ND PRI?
>YES
NO
```

STEP 3

Press OK

```
                          GPS
HI
SELECT 2ND
PRIORITY CH
PRESS [OK]
TO ACCEPT
```

STEP 4

Select new CH number

```
                          GPS
HI
SELECT 2ND
PRIORITY CH
PRESS [OK]
TO ACCEPT
```

STEP 5

Press OK

```
                          GPS
HI
2ND PRI CH
IS CHANGED

PRESS [OK]
```

STEP 6

Press OK

```
                          GPS
HI
2ND PRIORITY
 26°04.2172N
080°09.0933W
  AM11:57LOC
```

D10120-1

3.10 Transmitting

Press and hold the Push-to-Talk (**PTT**) key on the microphone to transmit on the selected channel, and then release to receive. The TX indicator appears during transmission.

Note: *International regulations and good communications practice dictate that you not interfere with other communications. Before transmitting, listen to make sure the channel is clear.*

The radio is equipped with a timeout timer in the event of a stuck key. After **PTT** has been held continuously for 5 minutes, transmission is discontinued, the message TX TIMEOUT appears, and an alert tone sounds.

After the timeout, the alarm continues to sound until **PTT** is released. The TX time out timer is reset and the radio returns to receive mode once the **PTT** key is released.

Note: *If the current channel is receive-only, an alert tone sounds when PTT is pressed, indicating such a transmission is not permitted.*

Overriding the Low Output Power Restriction

In the US, channels 13 and 67 are restricted to transmit at low power. However, you can temporarily override this low power restriction. To override the LO power restriction on channels 13 or 67 and transmit at high power:

1. Press and hold **PTT**.
2. Press and release The **HI/LO** key on the microphone. TX power is set to HI power for as long as you hold down **PTT**.
3. When you release **PTT**, power returns to LO.
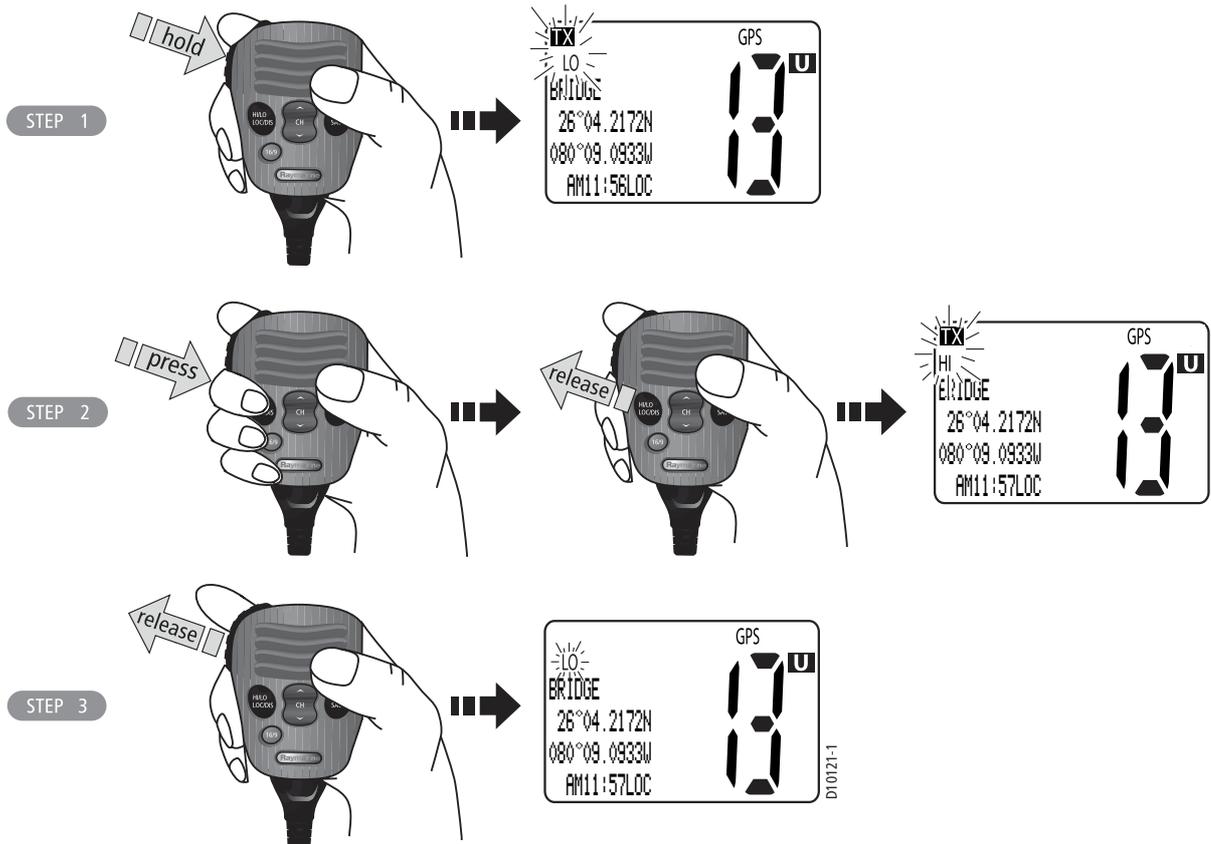
3.11 Menu Mode Operation

Press and release the **MENU/DSC** key while in standby mode to enter Menu Mode.

Menu mode is fully described in Chapter 4.

3.12 DSC Call Operation

Press and hold the **MENU/DSC** key for greater than 3 seconds while in standby operation mode to enter DSC Call Mode.

DSC Call mode is fully described in Chapter 5.

Chapter 4: Menu Settings

4.1 Menu Function

Most of the radio's functions reside in the Main Menu, which is accessed through the **MENU/DSC** key. A diagram of the menu structure can be found in Appendix C.

Making Menu and Programming Selections

There are two ways to make menu and character selections in your radio:

1. Most examples in this chapter describe making selections using the **CH/OK** knob on the transceiver.

2. However, you can also press the microphone up/down keys to make your selections and then press the microphone **HI/LO** key to accept.

Select with CH UP/DOWN keys

Accept with HI/LO key
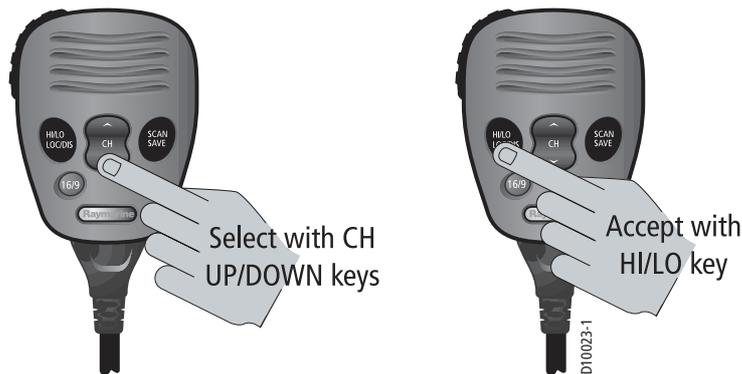
To make Menu selections:

1. Press and release the **MENU/DSC** key to enter Menu mode. The list of available menu groups appears.
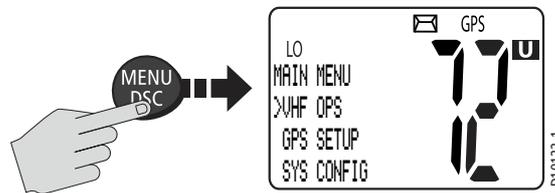
2. Use the **CH/OK** knob on the transceiver or **CH** up/down key on the microphone to scroll through the list until the desired menu is highlighted.

3. Press in the **CH/OK** knob on the transceiver or **HI/LO** key on the microphone to accept. The sub-menu headings are displayed.
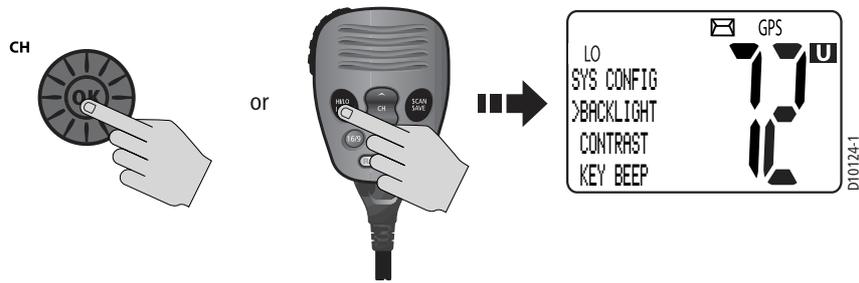

4. Rotate the **CH/OK** knob on the transceiver or press the **CH** up/down key on the microphone to highlight the desired sub-menu.
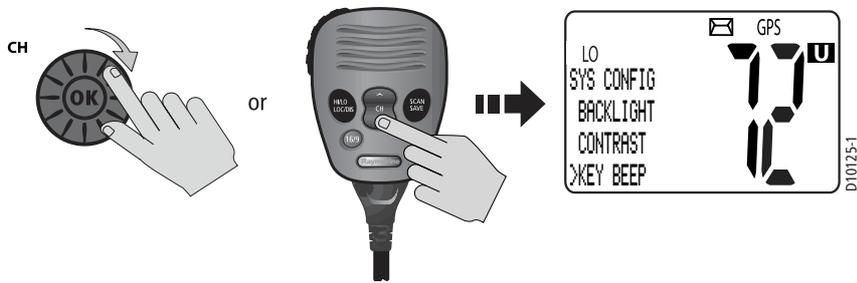
5. Press **CH/OK** on the transceiver or the **HI/LO** key on microphone to accept. The options under that sub-menu are displayed.
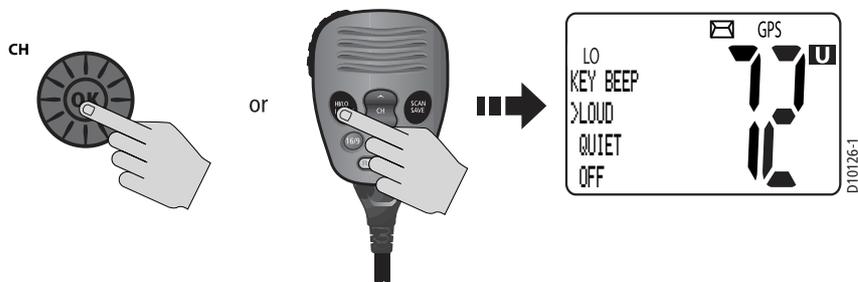
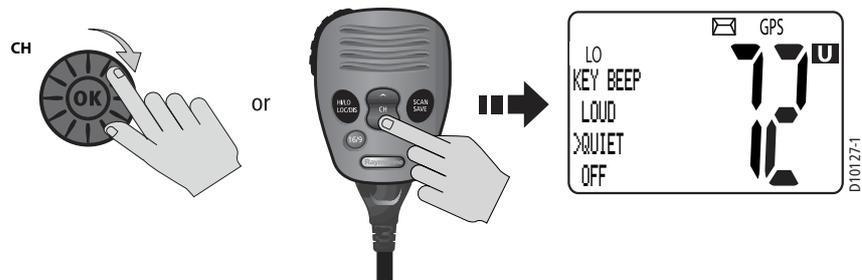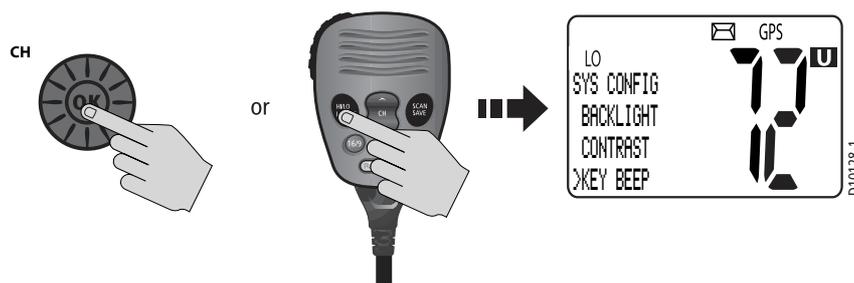6. Rotate the **CH/OK** knob on the transceiver or press the **CH** up/down key on the microphone to highlight the desired option.

7. Press **CH/OK** on the transceiver or the **HI/LO** key on the microphone to accept. The setting is changed. Continue in the same manner to make any other setting changes.

To return to the previous menu level, select the [BACK] menu option or press the **CLR/WX** key.

To exit the Menu mode, press the **CLR/WX** key again or else press the **16/9** key to switch to the priority channel in standby mode.

4.2 VHF Operations

This menu group controls basic radio functions. You access VHF Operations via the **MENU** key.
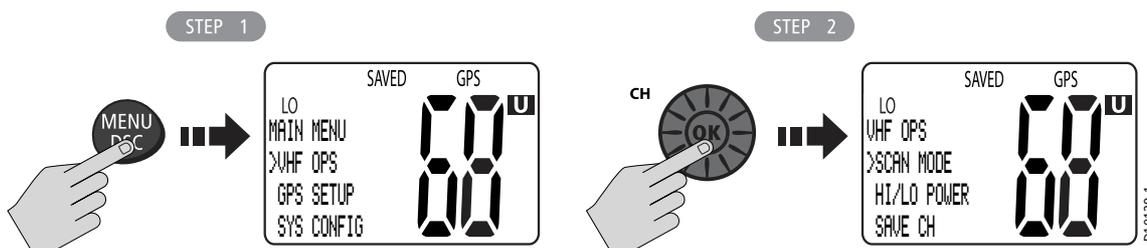
Scan Mode

This function automatically searches through all channels in the set for any that are broadcasting. If a transmission is received, the scan stops on the receiving channel as long as it is present. If the signal is lost for five seconds, the radio resumes scanning.

You can directly access the Scan Mode menu by pressing and releasing the **SCAN/ SAVE** key on the microphone. When a Scan Mode is active, you can terminate the scan and return the radio to standby mode by pressing and releasing the key again.

While scanning, press the microphone **CH** up/down keys or rotate the **CH/OK** knob on the transceiver to change the scan direction. UP (key)/clockwise (**CH** knob) increases the channel while DOWN (key) /counter-clockwise (**CH** knob) decreases it.

Your Ray49 is equipped with four types of scan options: All Scan, Saved (Memory) Scan, Priority All Scan and Priority Saved Scan. The following illustration demonstrates how to initiate All Scan but the procedure is the same for all scan mode options.

Note: *Whenever Weather Alert is activated, the WX Alert channel is also monitored during the Scan Modes. If the WX Alert tone is detected, the scan is halted to receive the Weather Alert broadcast.*
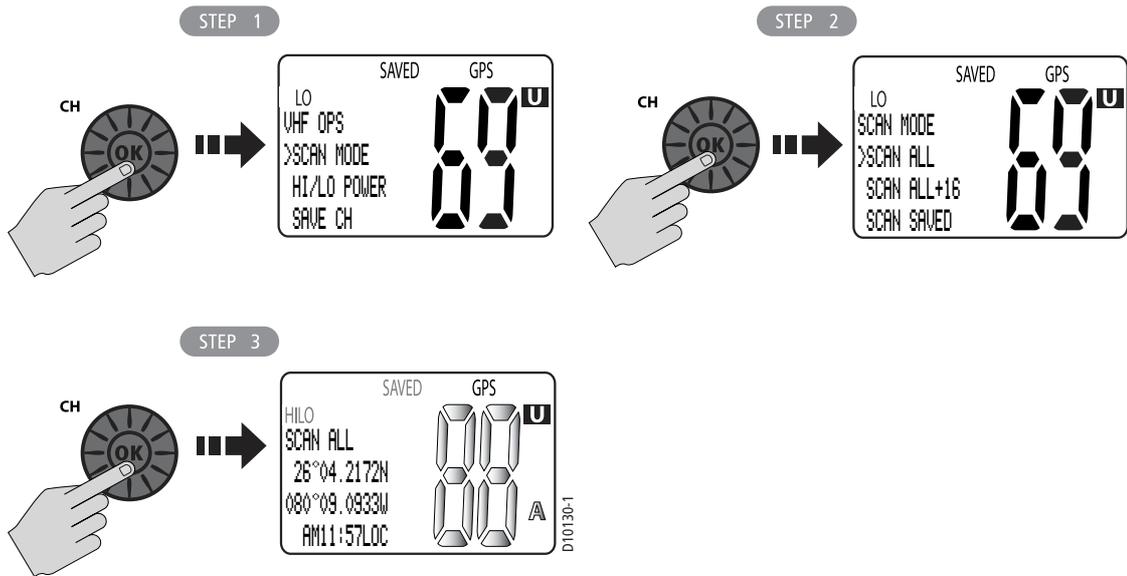
To *terminate* the SCAN mode and return to standby mode, press:
*   **SCAN/SAVE** key on the microphone
*   **CLR/WX** key on the transceiver

All Scan

In All Scan mode, all channels in the channel set are scanned in sequence. After the last channel number has been scanned, the cycle repeats.
When active, SCAN ALL appears on the display.
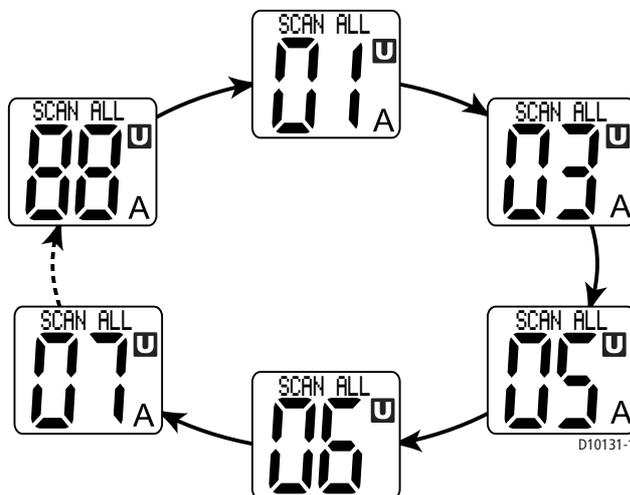
Priority All Scan

Priority All Scan searches for activity on all channels but alternates scanning the Priority Channel 16 after each channel.

When active, SCAN ALL+16 appears on the display.
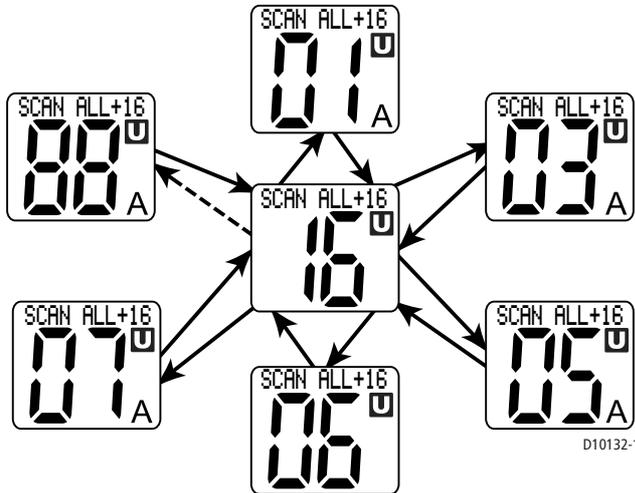
Saved (Memory) Scan

In Saved Scan mode, only the channels that have been saved in memory are scanned in sequence. After the last saved channel number has been scanned, the cycle repeats.

When active, SCAN SAVED appears on the display. If no channels have been saved into memory when you select this feature, an error tone sounds.
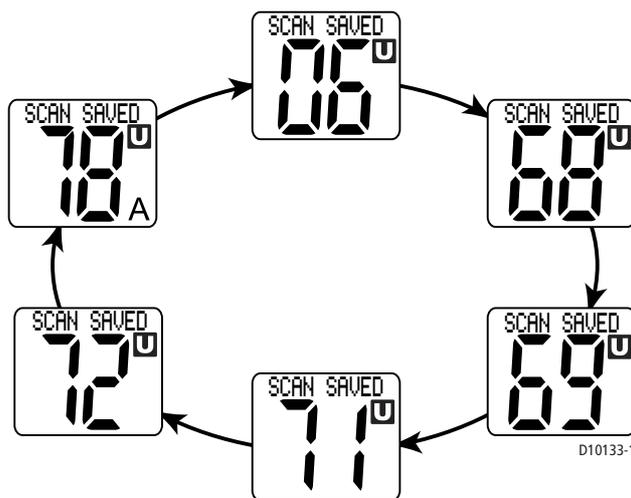
Priority Saved Scan

Priority Saved Scan is much like Priority Scan except that the radio alternates searching for activity on the Priority Channel 16 and the channels stored in memory.

When active, SCAN SAVD + 16 appears on the display.

Note: *If no channels have been saved into memory when you select this feature, an error tone sounds.*

D10134-1
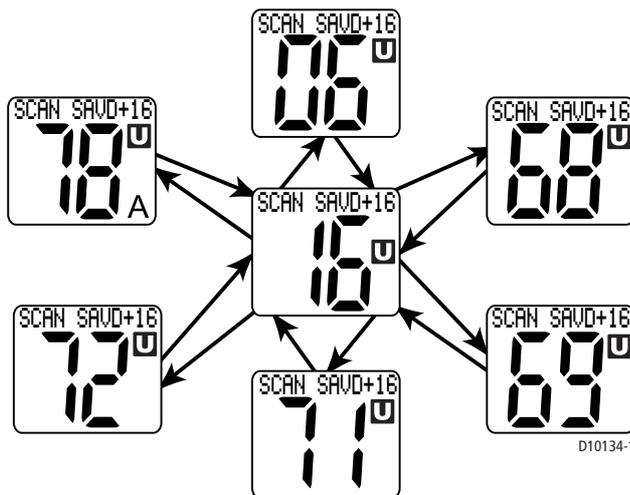
Setting the Power Output (HI/LO)

The choice of power output is dependent upon the distance of transmission and transmitting conditions. As a part of FCC procedures and marine communications courtesy, initial contact should always be attempted using low power. You should switch to high power only when contact can not be made on low power or in emergency situations. Rotate the **CH/OK** knob to toggle the TX power from LOW (1 watt) to HIGH (25 watts). The corresponding LO or HI indicator appears.

You can also press and release the **HI/LO–LOC/DIS** key on the microphone to toggle the TX power.
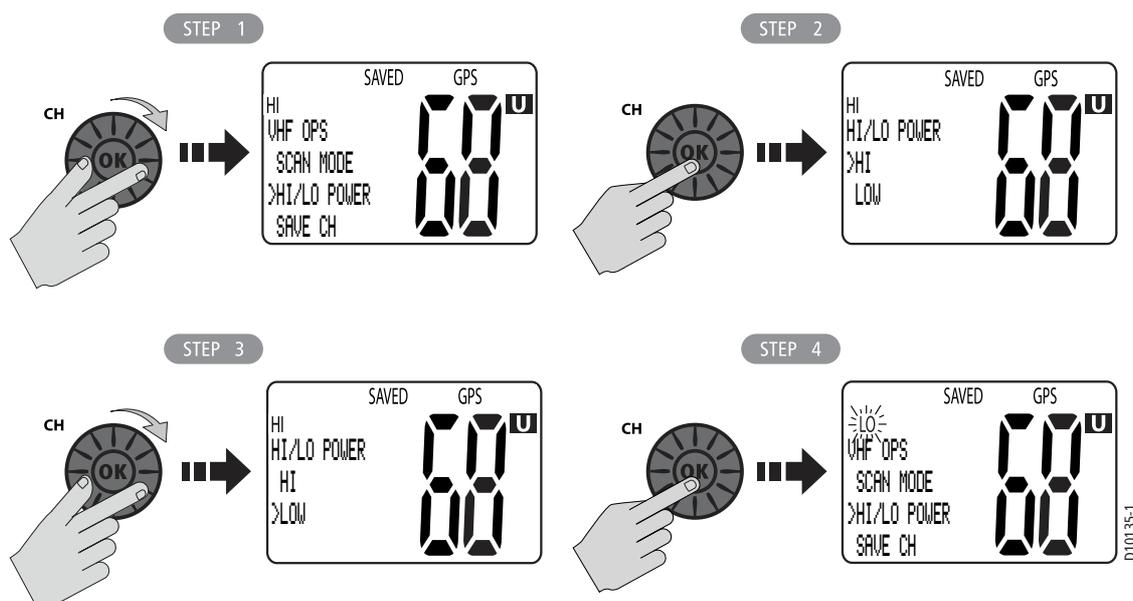
Some channels are limited by regulation to be low power only. If the HILO operation request is denied, an error tone beeps.

Channels restricted to low transmit power are as follows:
- Canadian channel set: 13, 15, 17, 77
- International channel set: 15, 17, 75, 76
- US channel set: 13, 17, 67, 77

Overriding the Low Output Power Restriction

In the US, channels 13 and 67 are restricted to transmit at low power. However, you can temporarily override this low power restriction.

To override the LO power restriction on channels 13 or 67 and transmit at high power:

1. Press and hold **PTT**.
2. While holding **PTT**, press and release the **HI/LO** microphone key
   The TX power is set to HI power for as long as you hold down **PTT**.
   When you release **PTT**, power returns to LO.
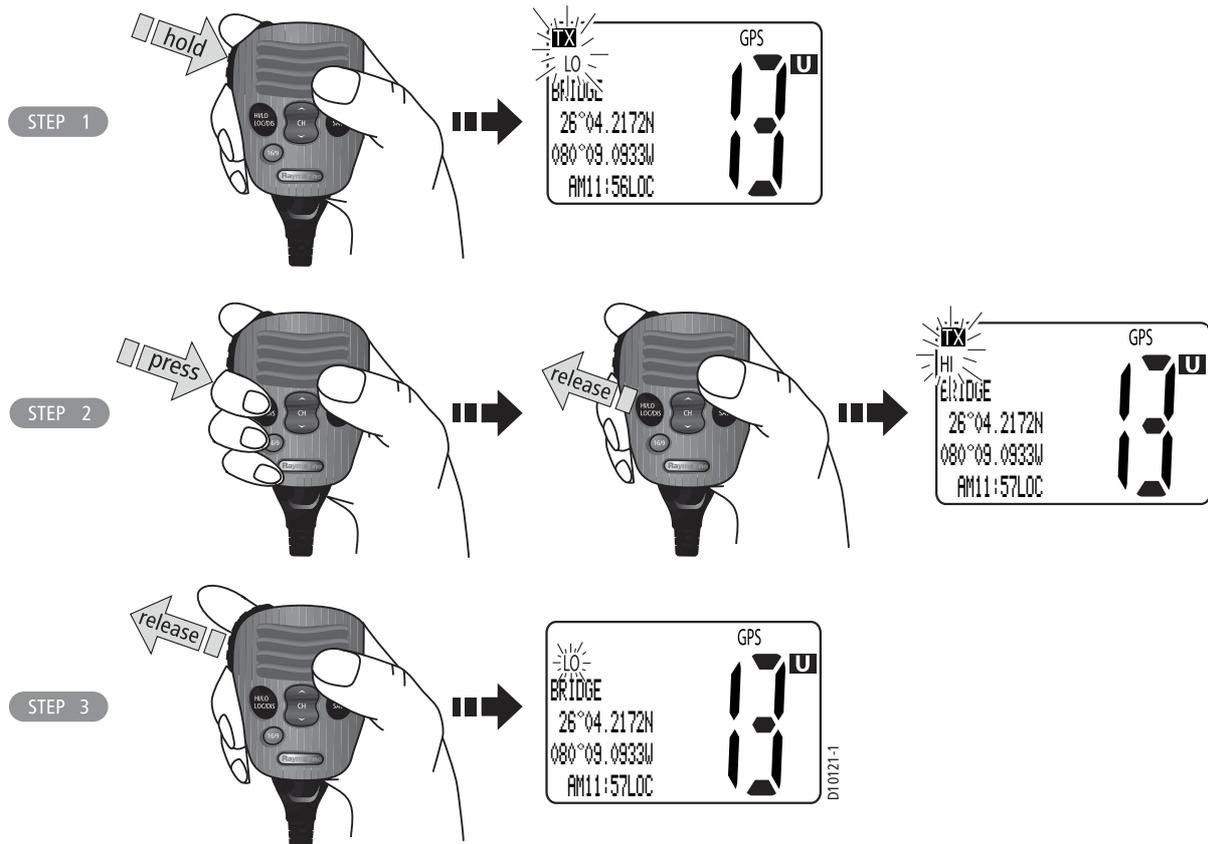
Saving Channels to Memory

The Ray49 can store any channel (except WX channels) into memory. The stored channels are the ones scanned in the Saved (Memory) Scan mode (see page 39). Any number of channels can be saved as memory channels.

Separate memory channel groups exist for USA, International, and Canadian frequency sets.

To add or remove a channel to/from memory:

1. Navigate to SAVE CH in the VHF OPS menu.
2. Press **CH/OK** to select SAVE CH.
3. Rotate **CH/OK** to select channel to be added to /removed from memory.
4. Press **CH/OK** to confirm (or **CLR/WX** to cancel).
5. To add the selected channel to memory, ensure that the arrow is pointing to SAVE, and then press **CH/OK**.
   To remove the selected channel from memory, navigate to CLEAR and then press **CH/OK**.

   The SAVED icon either appears to indicate that the current channel has been saved in memory or disappears to indicate that it has been removed from memory.

STEP 1

VHF OPS
 SCAN MODE
 HI/LO POWER
>SAVE CH

LO   GPS U
68

STEP 2

SAVE CHANNEL
SELECT CH

[OK] / [CLR]

LO   GPS U
68

STEP 3

SAVE CHANNEL
SELECT CH

[OK] / [CLR]

LO   GPS U
12

STEP 4

SAVE CHANNEL
>SAVE
 CLEAR

LO   GPS U
12

STEP 5

SAVE CHANNEL
SELECT CH

[OK] / [CLR]

SAVED   GPS U
LO
12

D10136-1
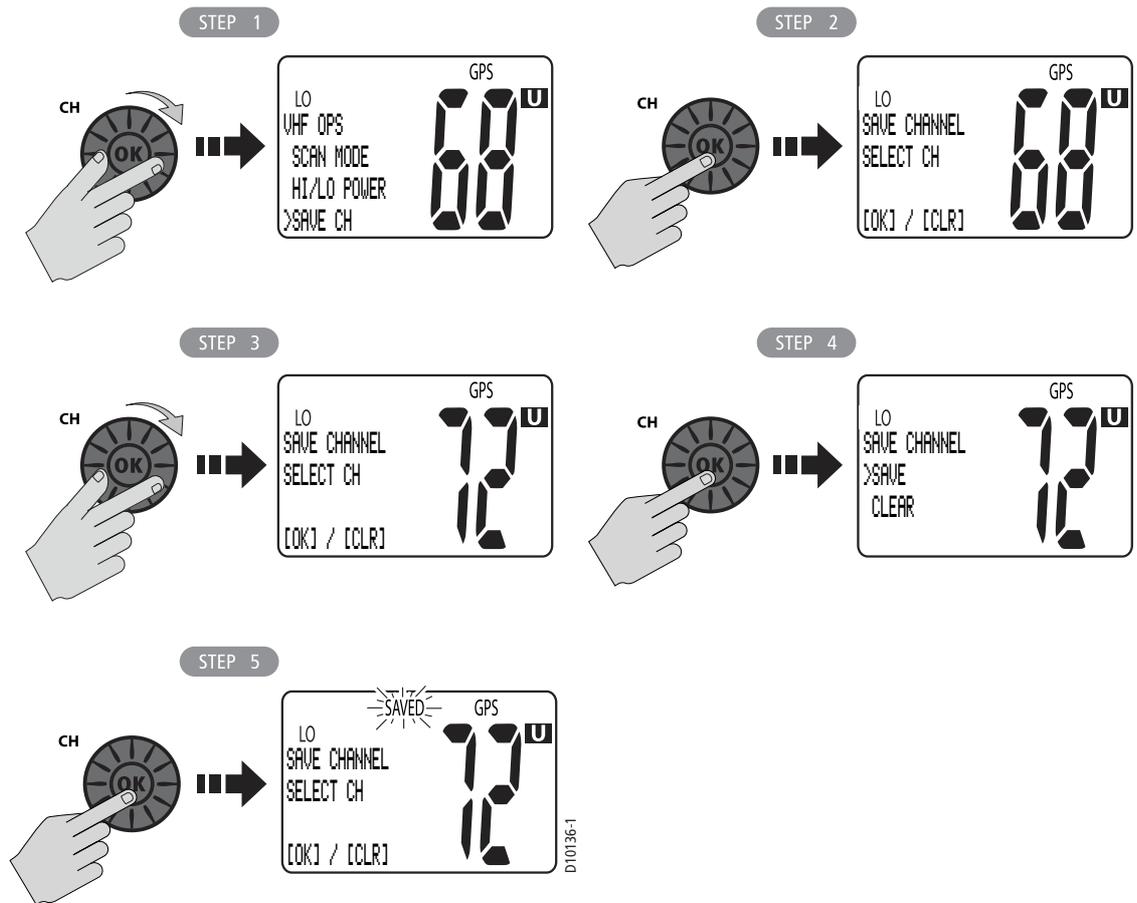
SCAN
SAVE

You can also add the current channel to memory by pressing and holding the
SCAN/SAVE key on the microphone. If the channel is already saved, pressing and
holding the key removes the channel from memory.

Using the Watch Modes

The Watch Modes monitor the programmed Priority Channel and other user-
selected channel(s). The watch is halted when activity is detected on a monitored
channel. The Ray49 is equipped with 2 types of monitor operations: Dual Watch
and Tri Watch.

Note: *Whenever Weather Alert is activated, the WX Alert channel is also monitored dur-
ing Dual Watch and Tri Watch.*

Dual Watch
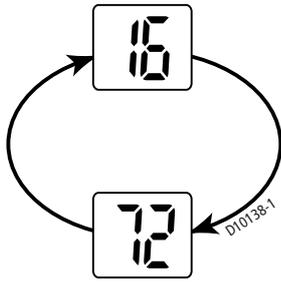
Dual Watch monitors the current working channel and Channel 16 in cycle.

DUAL 16 appears on the top line of the display.

Dual Watch is demonstrated in the figure to the left; the sample working channel is channel 72.

Tri Watch
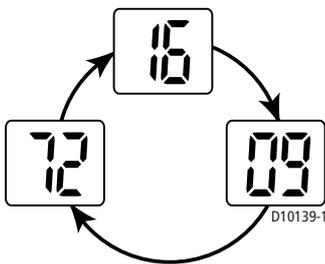
Tri Watch monitors in cycle channel 16, the current working channel and the channel you have set as the Secondary Priority Channel.

TRI 16+09 appears on the top line of the display.

Tri Watch is demonstrated in the figure to the left; the sample working channel is channel 72.

Press and release the **16/9** key to terminate Watch mode and switch to the Priority Channel.

Press and release the **CLR/WX** key to terminate Watch mode and return to the last-used channel.

Note: *During Tri Watch Mode, the WX and CH keys are inactive and an error beep sounds if pressed (if the Key Beep function is enabled).*

STEP 1

CH

```
          LOCAL        GPS
  LO                       U
VHF OPS
  HI/LO POWER           1 2
  SAVE CH
>WATCH MODE
```

STEP 2

CH

```
          LOCAL        GPS
  LO                       U
WATCH MODE
>DUAL WATCH            1 2
  TRI WATCH
  [BACK]
```

STEP 3

CH

```
          LOCAL        GPS
  LO                       U
WATCH MODE
  DUAL WATCH            1 2
>TRI WATCH
  [BACK]
```

STEP 4

CH

```
          LOCAL        GPS
  LO                       U
TRI CH16+09
  26°04.2172N          1 2
  080°09.0933W
  PM12:32LOC
```
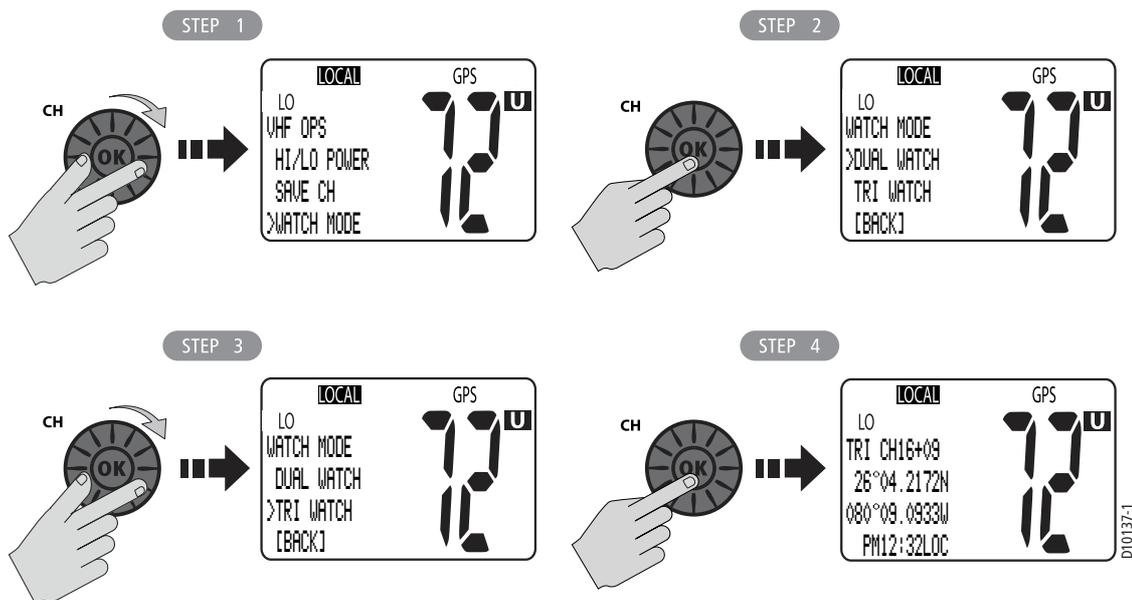
Frequency Band

The Ray49 can transmit and receive all USA, International and Canadian frequencies. This setting determines which channel set is being used. The appropriate indicator is illuminated in the LCD: **U** for USA, **I** for International, or **C** for Canadian channel sets.
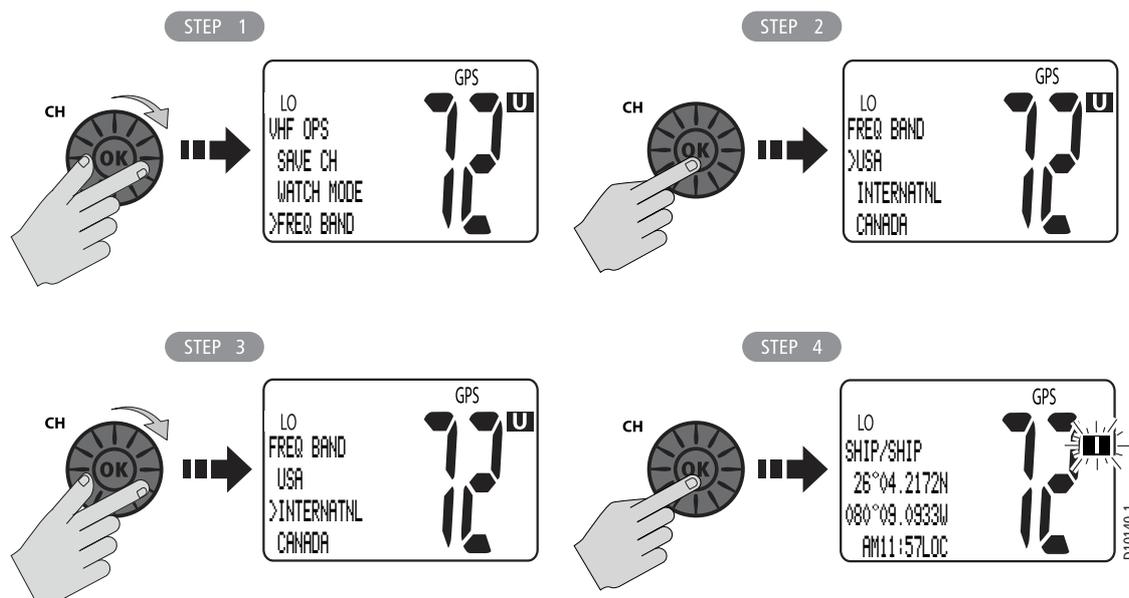
Channel Name

The Ray49 displays a descriptive name of up to 9 characters in the top line of the dot matrix display, to the left of the channel number. This option modifies the name for the currently-selected channel from its default.

To change the Channel Name from the default:

1. From the VHF OPS menu, navigate to CH NAME.
2. Press the **CH/OK** knob to select.
3. Rotate **CH/OK** to display the channel whose name you want to edit.
4. Press **CH/OK** to select. Two options are presented: edit and delete.
5. Press **CH/OK** again to select EDIT. The name for the currently-selected channel appears. The first character is underlined and blinking, indicating that it is ready to be edited.
6. Use the **CH/OK** knob to modify the first character in the NAME field using the same technique described in "Adding a new Entry" on page 64.
7. Press **CH/OK** to accept and advance to the next character position.
8. Press and hold **CH/OK** for 3 seconds when completed. The new name appears for the channel.

To completely remove the Channel Name, rotate the **CH/OK** knob to choose DELETE in step 5 above, instead, and then press **CH/OK** to select. After the name is deleted, no name is displayed for this channel.

STEP 1
```
LO                GPS
VHF OPS            72 U
 WATCH MODE
 FREQ BAND
>CH NAME
```

STEP 2
```
LO                GPS
CH NAME           72 U
SELECT CH

[OK] / [CLR]
```

STEP 3
```
LO                GPS
SAVE CHANNEL      68 U
SELECT CH

[OK] / [CLR]
```

STEP 4
```
LO                GPS
CH NAME           68 U
>EDIT
 DELETE
```

STEP 5
```
LO                GPS
EDIT NAME         68 U
PLEASURE

HOLD [OK]
```

STEP 6
```
LO                GPS
EDIT NAME         68 U
FLEASURE

HOLD [OK]
```

STEP 7
```
LO                GPS
EDIT NAME         68 U
FISHING_

HOLD [OK]
```

STEP 8 HOLD for 3 secs
```
FISHING           GPS
 26°04.2172N      68 U
080°09.0933W
 AM11:57LOC
```
D10141-1

Sensitivity

Use this setting to switch the transmit power from high to low. Rotate the **CH/OK** knob t o toggle between full receiver sensitivity (Distant mode) and attenuated receiver sensitivity (Local mode). The LOCAL icon appears while in Local mode and then is removed in Distant mode.
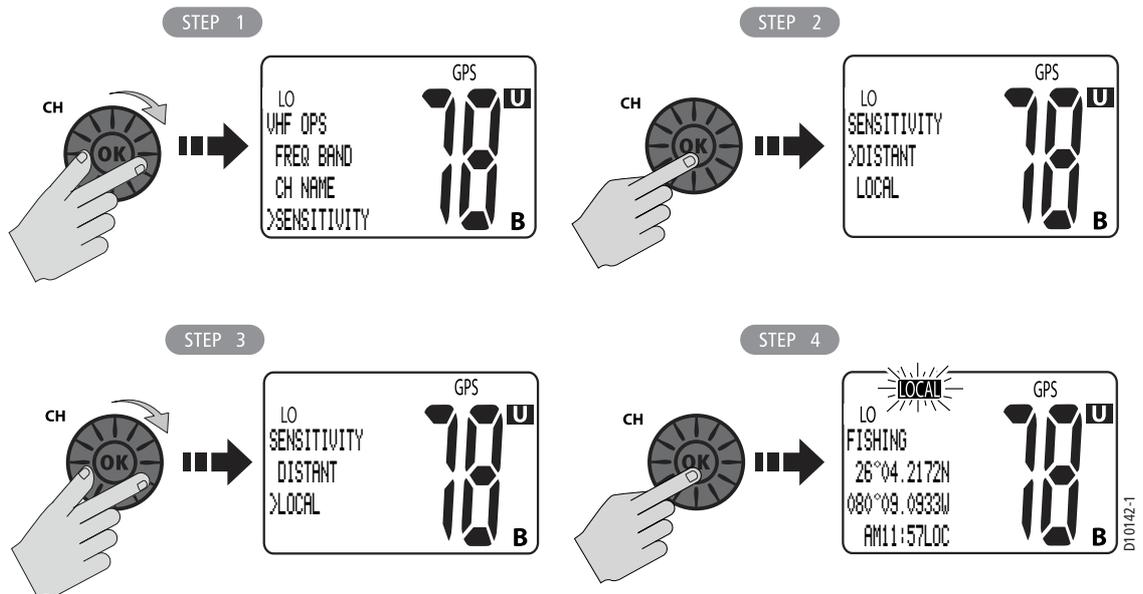
4.3 GPS/Time Setup

By default, the Ray49 auto-detects NMEA 0183 strings and decodes appropriate latitude/longitude position and time or COG/SOG. When position data is available, the "GPS" icon appears on the top line of the LCD. If the GPS navigation receiver is not connected or is not functional, a manual latitude/longitude position and UTC time can be entered and used in the DSC distress transmitted message.
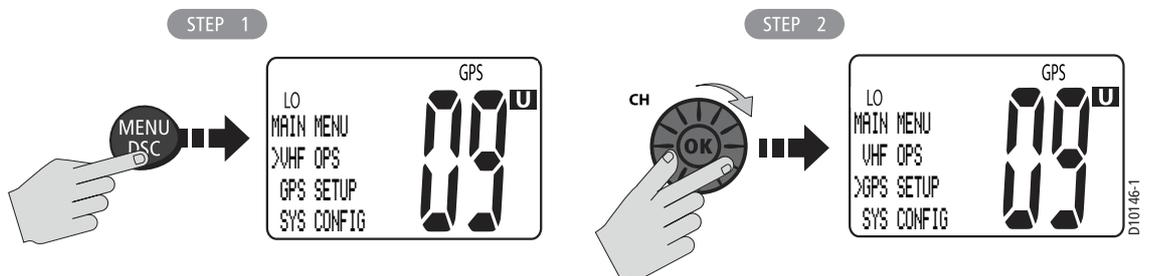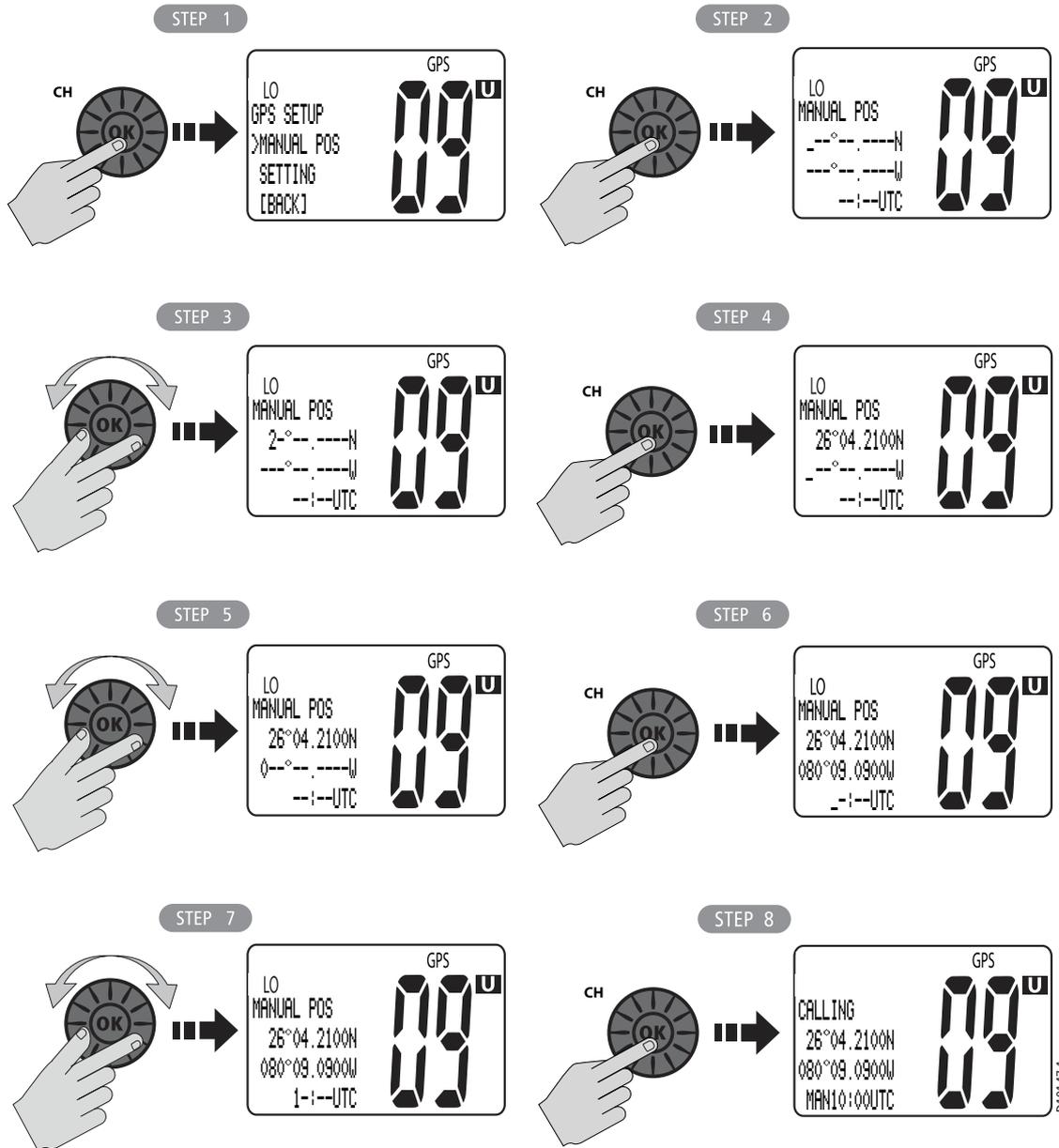

Manual Position

If no GPS data is available and the MMSI number has been programmed, the "NO GPS" icon does not appear, and POS DATA REQ is displayed on the dot matrix display, followed by NO POS DATA. An alarm sounds for 5 seconds or until you acknowledge by pressing any key.

The alert repeats every four hours as long as no position information has been entered manually. If position data is entered manually but has not been updated during the previous 23.5 hours, all the position (lat/lon) fields are set to all 9's, time field is set to all 8's, and the display reverts to NO POS DATA.

Note: *The Manual Lat/Lon function is valid only when your radio is not connected to a GPS.*
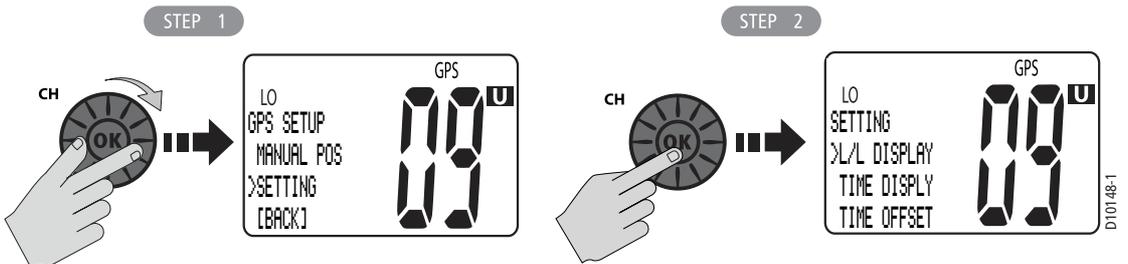
To manually set the GPS position and time settings:

1. Under the GPS SETUP menu, point the arrow to MANUAL POS.

2. Press in **CH/OK** to accept. The Manual Position screen appears.The first character space in the latitude field is highlighted with a flashing underline. A more detailed description of manual character entry can be found in "Adding a new Entry" on page 64.

3. Using the **CH/OK** knob, scroll through available characters.

4. When the desired character appears, press **CH/OK** to accept it. The next character to be filled in sequence is underlined (_).

    • Continue this process until all latitude data has been selected.

    • When the direction character is flashing, rotate the **CH/OK** knob to toggle between N and S, if necessary.

    • When complete, the first character in the longitude field is underlined and flashing.

5. Using the **CH/OK** knob, scroll through available characters.

6. When the desired character appears, press **CH/OK** to accept it. The next character to be filled in sequence is underlined (_).

    • Continue this process until all longitude data has been selected.

    • When the direction character is flashing, rotate the **CH/OK** knob to toggle between E and W, if necessary.

    • When complete, the first character in the time field is underlined and flashing.

7. Using the **CH/OK** knob, scroll through available characters.

8. When the desired character appears, press **CH/OK** to accept it. The next character to be filled in sequence is underlined (_).

    • Continue this process until all time data been selected.

    • Complete the manual entry operation by pressing and holding **CH/OK**, which saves the data you have entered.

    • When time data is entered manually, the MAN indicator appears in front of the time, which is displayed in UTC.

    • When complete, the radio displays the manual lat/lon and time data.

STEP 1

```
        GPS
      LO        ⎡▮▮⎤
GPS SETUP    ⎡  ⎤ U
>MANUAL POS  ⎢09⎥
 SETTING     ⎢  ⎥
 [BACK]      ⎣  ⎦
```

STEP 2

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 --°--.----N ⎢09⎥
---°--.----W ⎢  ⎥
   --:--UTC  ⎣  ⎦
```

STEP 3

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 2-°--.----N ⎢09⎥
---°--.----W ⎢  ⎥
   --:--UTC  ⎣  ⎦
```

STEP 4

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 26°04.2100N ⎢09⎥
 -°--.----W  ⎢  ⎥
   --:--UTC  ⎣  ⎦
```

STEP 5

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 26°04.2100N ⎢09⎥
0--°--.----W ⎢  ⎥
   --:--UTC  ⎣  ⎦
```

STEP 6

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 26°04.2100N ⎢09⎥
080°09.0900W ⎢  ⎥
   -:--UTC   ⎣  ⎦
```

STEP 7

```
        GPS
      LO        ⎡▮▮⎤
MANUAL POS   ⎡  ⎤ U
 26°04.2100N ⎢09⎥
080°09.0900W ⎢  ⎥
   1-:--UTC  ⎣  ⎦
```

STEP 8

```
        GPS
      LO        ⎡▮▮⎤
CALLING      ⎡  ⎤ U
 26°04.2100N ⎢09⎥
080°09.0900W ⎢  ⎥
 MAN10:00UTC ⎣  ⎦
```

D10147-1

Settings

You can also set how some time and position information is displayed on the screen. Make your selection from the options on the list.

STEP 1

```
        GPS
      LO        ⎡▮▮⎤
GPS SETUP    ⎡  ⎤ U
 MANUAL POS  ⎢09⎥
>SETTING     ⎢  ⎥
 [BACK]      ⎣  ⎦
```

STEP 2

```
        GPS
      LO        ⎡▮▮⎤
SETTING      ⎡  ⎤ U
>L/L DISPLAY ⎢09⎥
 TIME DISPLY ⎢  ⎥
 TIME OFFSET ⎣  ⎦
```

D10148-1

Latitude/Longitude Display

The L/L DISPLAY setting indicates whether Latitude and Longitude position data are displayed on the screen in standby mode.

Time Display

The TIME DISPLY setting indicates whether time information is displayed on the screen in standby mode. When manual time is used, it is always displayed as UTC time, even if you have entered an offset.

Note: *If TIME DISPLAY is set ON, COG/SOG is automatically set to OFF. Because they occupy the same line on the LCD, only one of these two settings can be displayed at a time.*

Time Offset

The TIME OFFSET setting indicates the amount of time to add or subtract from UTC time to equal your local time. Rotate the **CH/OK** knob to select a value from between +13 to –13 hours of UTC and then press ACCEPT to confirm. After setting up Time Offset, "LOC" is displayed to the right of the Time field to indicate local time.

Time Format

The TIME FORMAT setting indicates whether the time is displayed in 12 hour or 24 hour format.

COG/SOG Display

This setting determines whether Course Over Ground and Speed Over Ground (COG/SOG) data from the GPS is displayed on the bottom line of the dot matrix display instead of the time of day. The menu setting "Bearing Mode" on page 53 determines whether the True or Magnetic heading is displayed for COG. The Speed Unit setting determines whether knots, MPH or KPH is used for SOG.
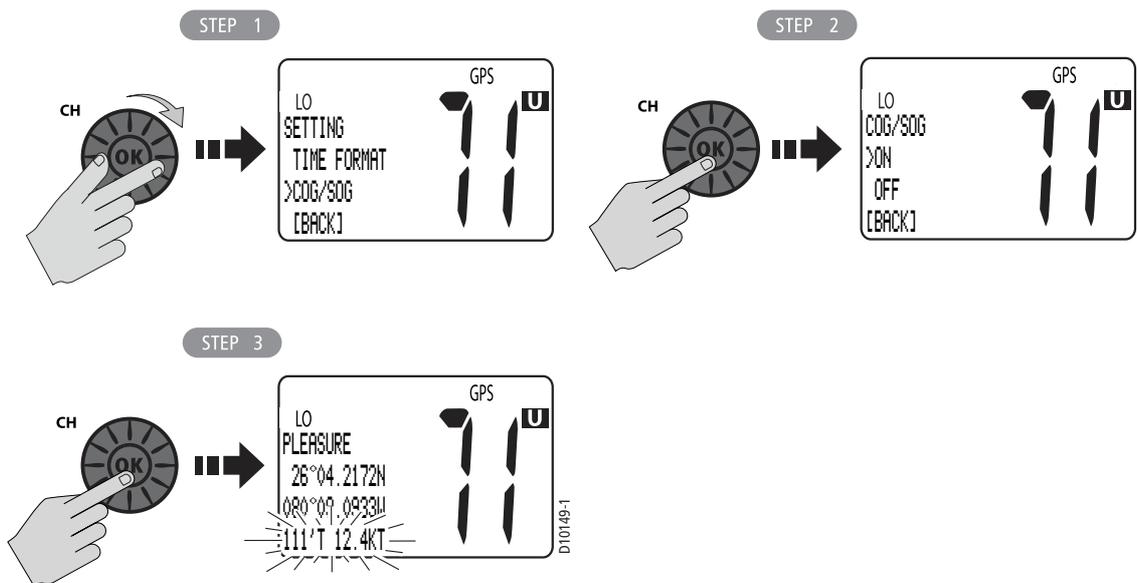
Note: *If COG/SOG is set ON, TIME DISPLAY is automatically set to OFF. Because they occupy the same line on the LCD, only one of these two settings can be displayed at a time.*

NMEA Out

When Distress Call and Position (lat/lon) information is received from other stations, your Ray49 has the capability of forwarding this data to your display unit over the NMEA port so that it can be displayed on the screen. You can specify whether this option is ON or OFF.

4.4 System Configuration

Use these menu items for selecting general system-wide settings.
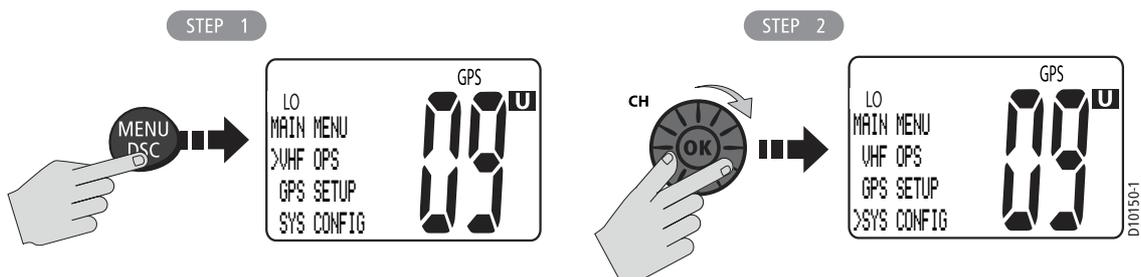
Backlight Adjustment

This setting adjusts the backlight brightness for the LCD, microphone keypad and transceiver keypad. Choose from 10 brightness settings or OFF.

Rotate the **CH/OK** knob or use the microphone up/down arrow keys to select the desired backlight level. The number of blocks illuminated in the bar indicates the level, one through ten. For HI all 10 are illuminated; for OFF none are illuminated.

Press the transceiver **CH/OK** knob or microphone **HI/LO** key to accept.
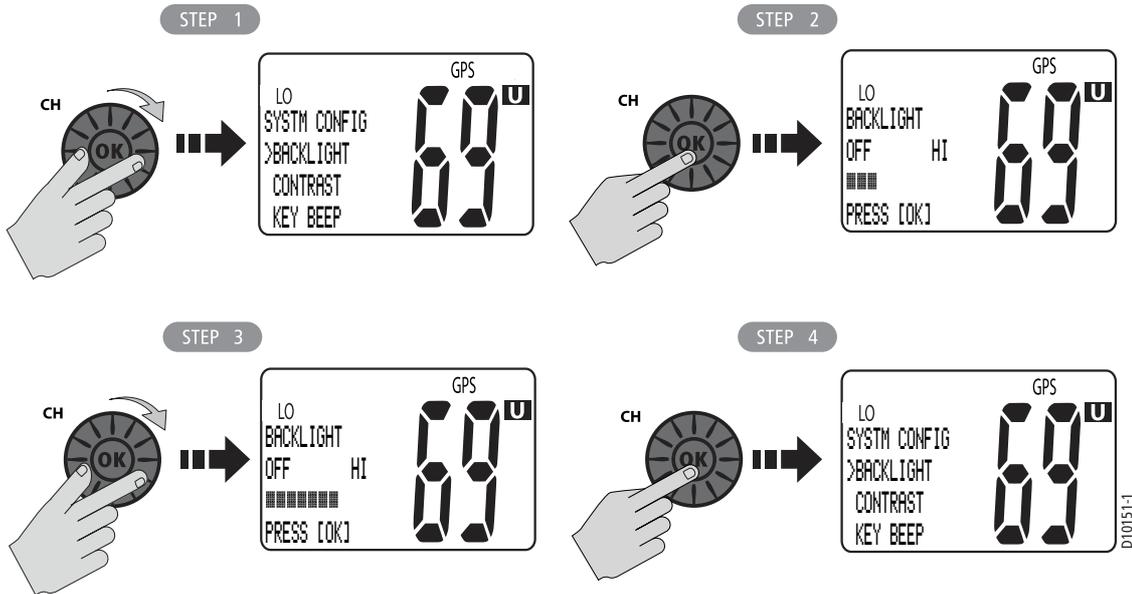

Contrast Adjustment

This setting adjusts the levels of LCD contrast. Choose from 10 settings.

Rotate the **CH/OK** knob to select the desired contrast level. The number of blocks illuminated in the bar indicate the level. A larger number of blocks indicate a darker LCD. For HI, all 10 blocks are illuminated; for LO none are illuminated.
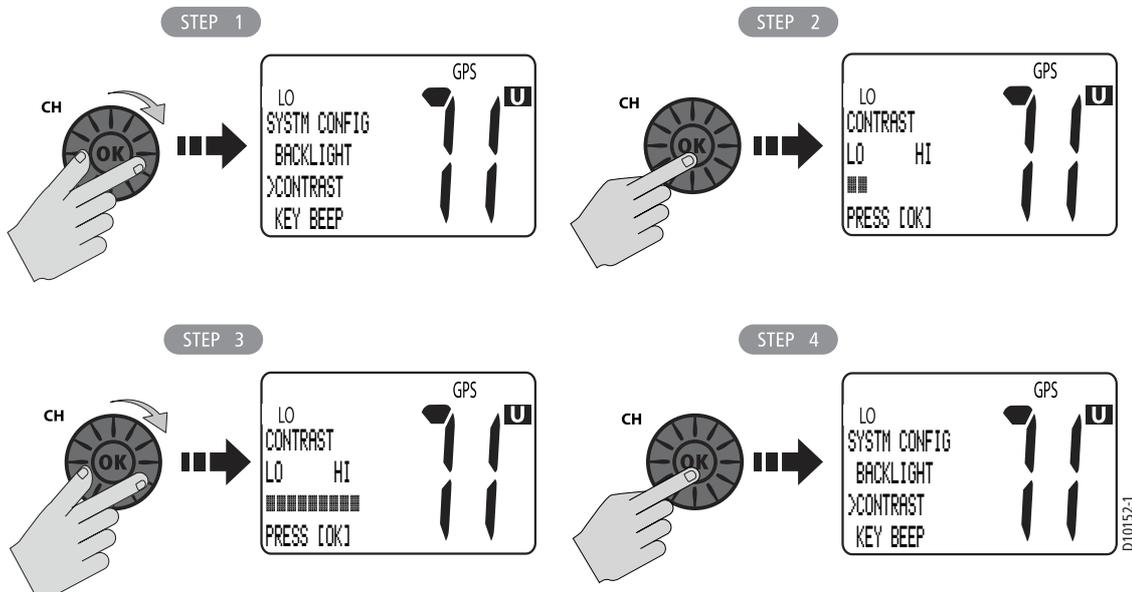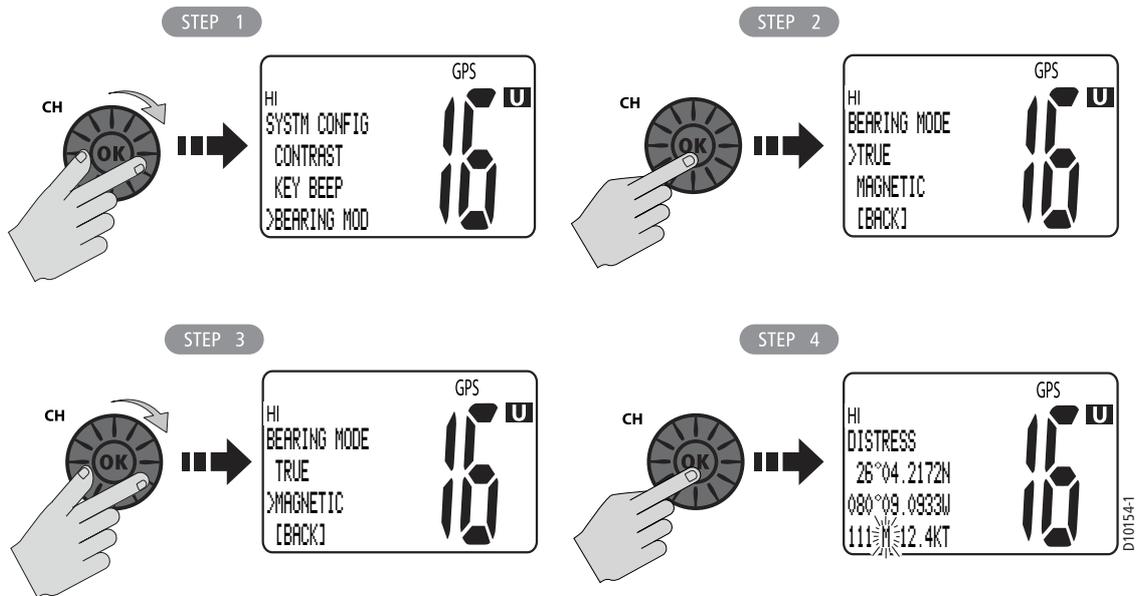
Key Beep

This setting is used to set the volume of the beep that sounds when a key is pressed. Select LOUD, QUIET or OFF.
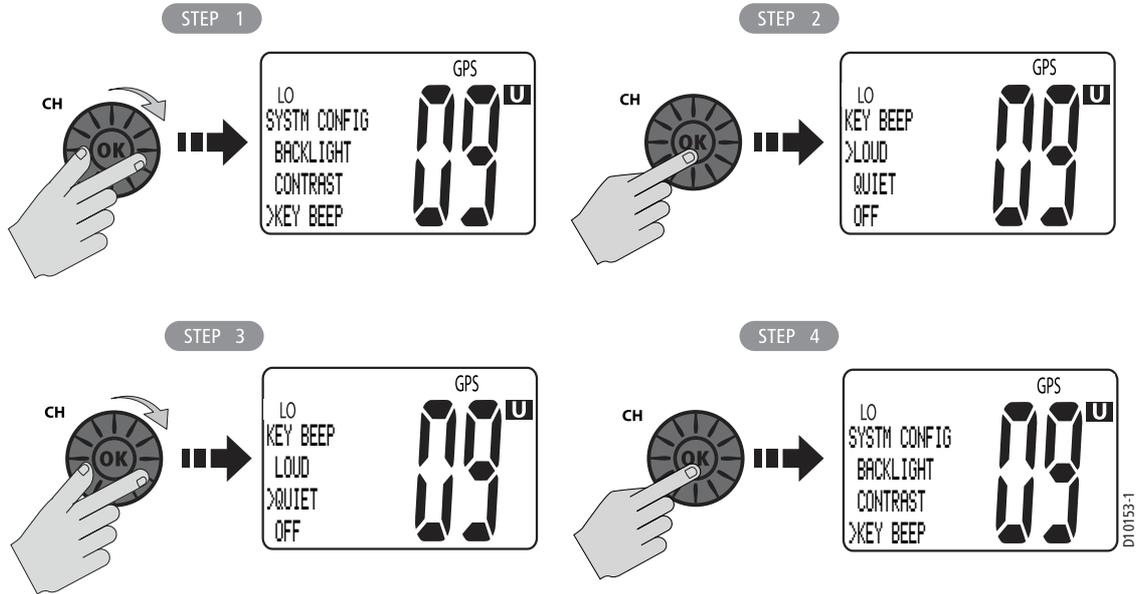
Bearing Mode

This setting is used to determine how heading data are displayed when COG/SOG is displayed (see page 50). Select MAGNETIC or TRUE. If you select MAGNETIC, an "M" appears. If TRUE is selected, a "T" appears.

Speed Unit

This parameter sets the unit for Speed that is used to display all data, including information received from other instruments on the system. The speed unit appears on the LCD when COG/SOG is displayed (see page 50).
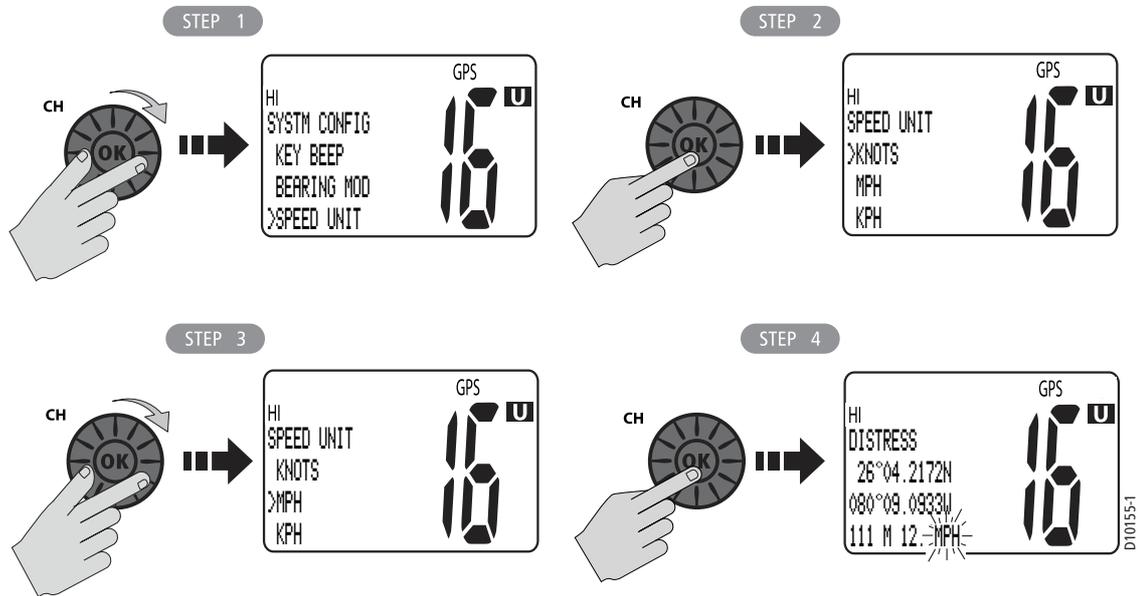

System Test

This menu item displays status of three separate conditions:

| Item	Status	Meaning
GPS	OK	Valid NMEA signal received
	NO	NMEA signal not received
BATTERY	OK	Battery voltage within nominal limits (10.5–15.8 VDC)
	NO	Battery is below 10.5 VDC or above 15.8VDC
DSC	OK	DSC processor is operating properly.
	NO	DSC processor is not operating properly.
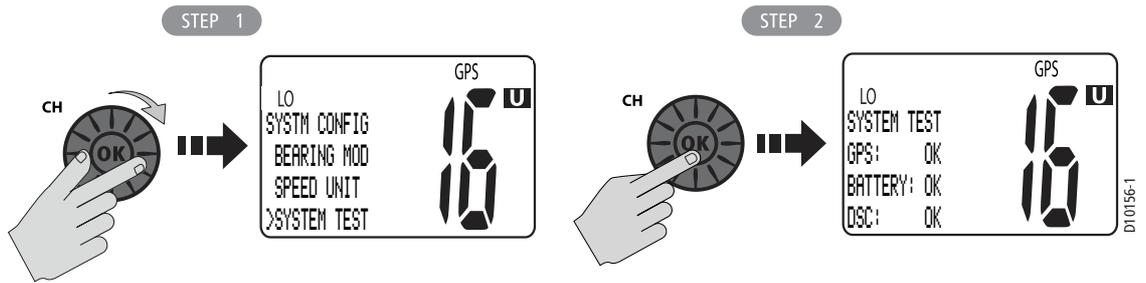
Version Number

This menu item displays the hardware and software versions of your radio.
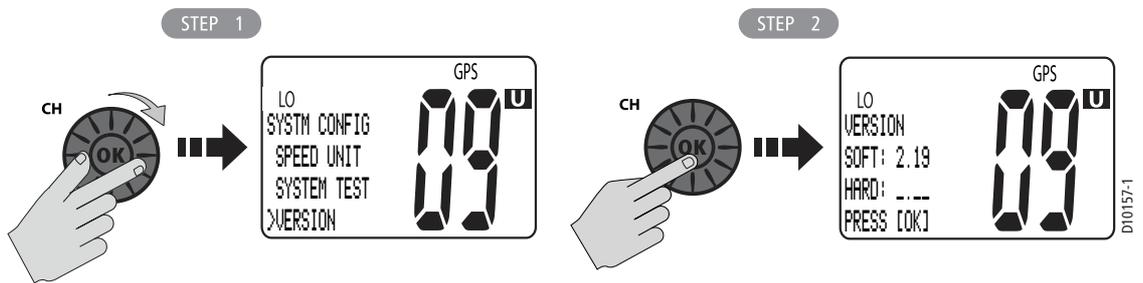
Reset

Use this menu item to return your radio to the default factory settings. The following items are reset. All other settings are unaffected.
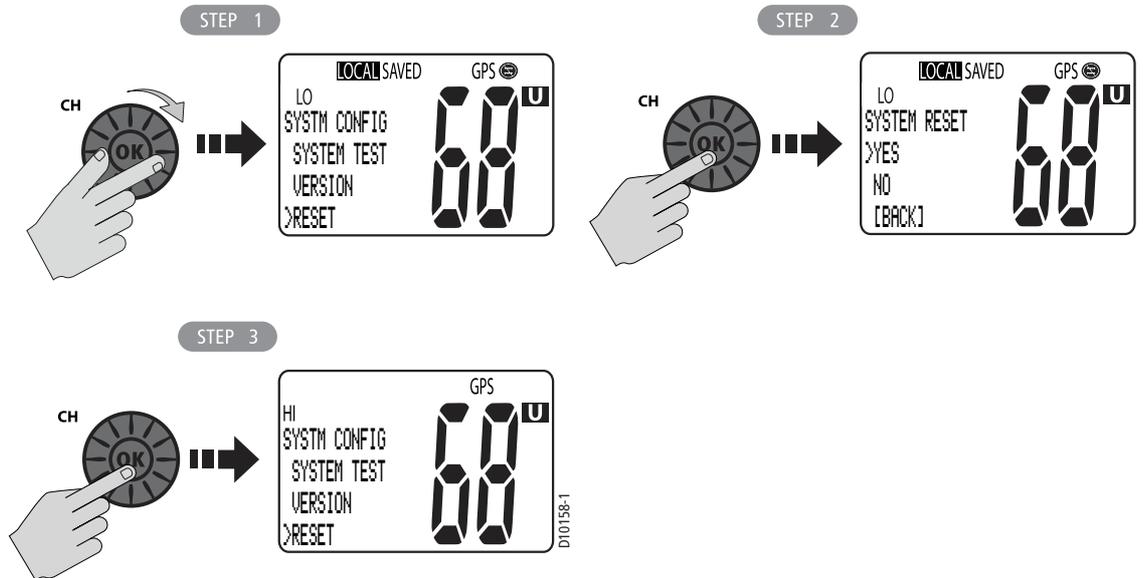
VHF OPS

- **HI/LO POWER**
  Set to HI.

- **SAVE CH**
  The Saved Channel list is cleared.

- **SENSITIVITY**
  Set to DISTANT.

GPS SETUP

- **SETTING**
  L/L DISPLAY is set ON.

  TIME DISPLY is set ON.

  TIME OFFSET is set to 0.

  TIME FORMAT is set to 12 HR.

  COG/SOG is set OFF.

SYSTEM CONFIG

- **KEY BEEP**
  Set to QUIET.

- **BEARING MODE**
  Set to MAGNETIC.

- **SPEED UNIT**
  Set to KNOTS.

DSC MENU

- **RECV'D CALLS**
  All logs are cleared.

- **DSC SETUP**
  AUTO CH CHG is set AUTO.