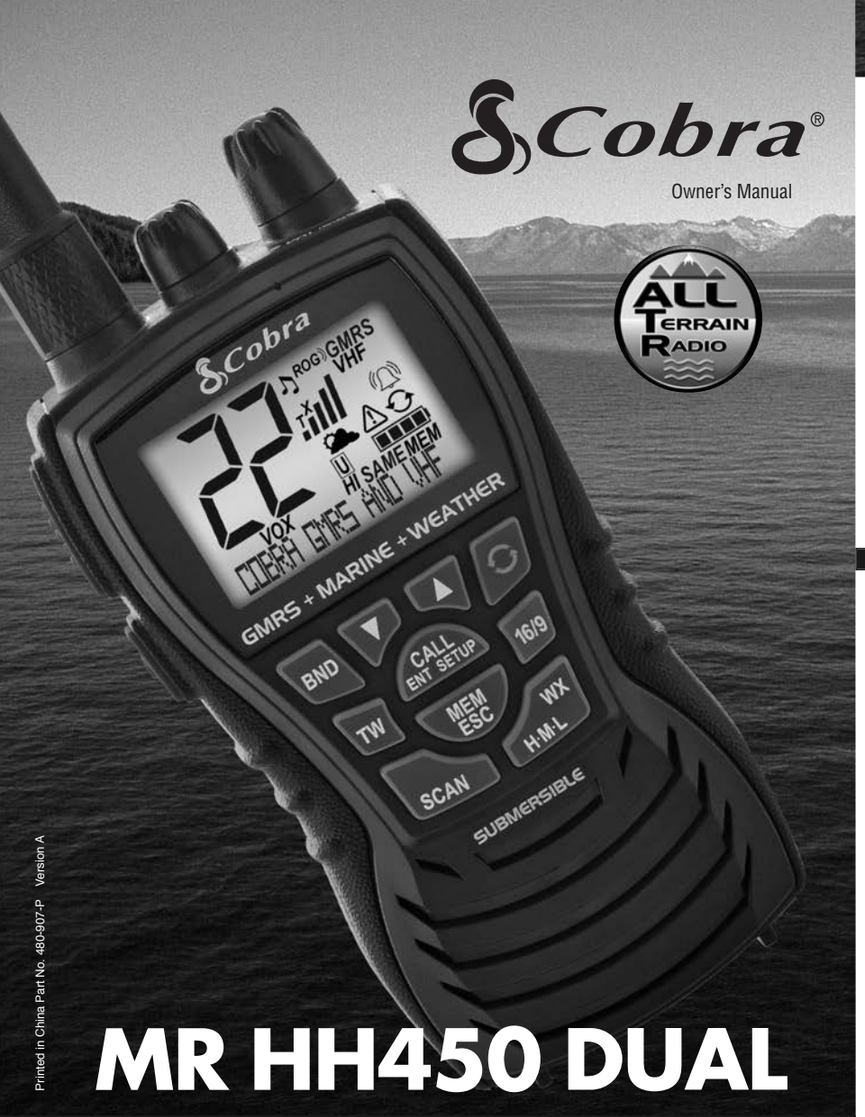


Cobra®

Owner's Manual

ALL TERRAIN RADIO

MR HH450 DUAL

Printed in China Part No. 480-907-P Version A

Nothing Comes Close to a Cobra®

English

Introduction

Our Thanks to You and Customer Assistance

Our Thanks to You

Thank you for purchasing a Cobra VHF/GMRS Dual Band radio. Properly used, this Cobra® product will give you many years of reliable service.

HowYour Cobra VHF/GMRS Radio Works

This dual band radio is a battery-powered portable transceiver for use afloat or on land. In Marine VHF mode it gives you two-way vessel-to-vessel and vessel-to-shore station communications, primarily for safety and secondarily for navigation and operational purposes.

In GMRS mode it allows you to reach other GMRS capable radios for short-distance two-way land mobile communication. This mode is normally used for small group communication such as in a general residential area or during recreational group outings.

Note: GMRS radio usage requires an FCC License.

Customer Assistance

Customer Assistance

Should you encounter any problems with this product, or not understand its many features, please refer to this owner's manual. If you require further assistance after reading this manual, Cobra Electronics offers the following customer assistance services:

For Assistance in the U.S.A.

Automated Help Desk English only.
24 hours a day, 7 days a week 773-889-3087 (phone).

Customer Assistance Operators English and Spanish.
8:00 a.m. to 5:30 p.m. Central Time Mon. through Fri. (except holidays)
773-889-3087 (phone).

Questions English and Spanish.
Faxes can be received at 773-622-2269 (fax).

Technical Assistance English only.
www.cobra.com (on-line: Frequently Asked Questions).
English and Spanish. productinfo@cobra.com (e-mail).

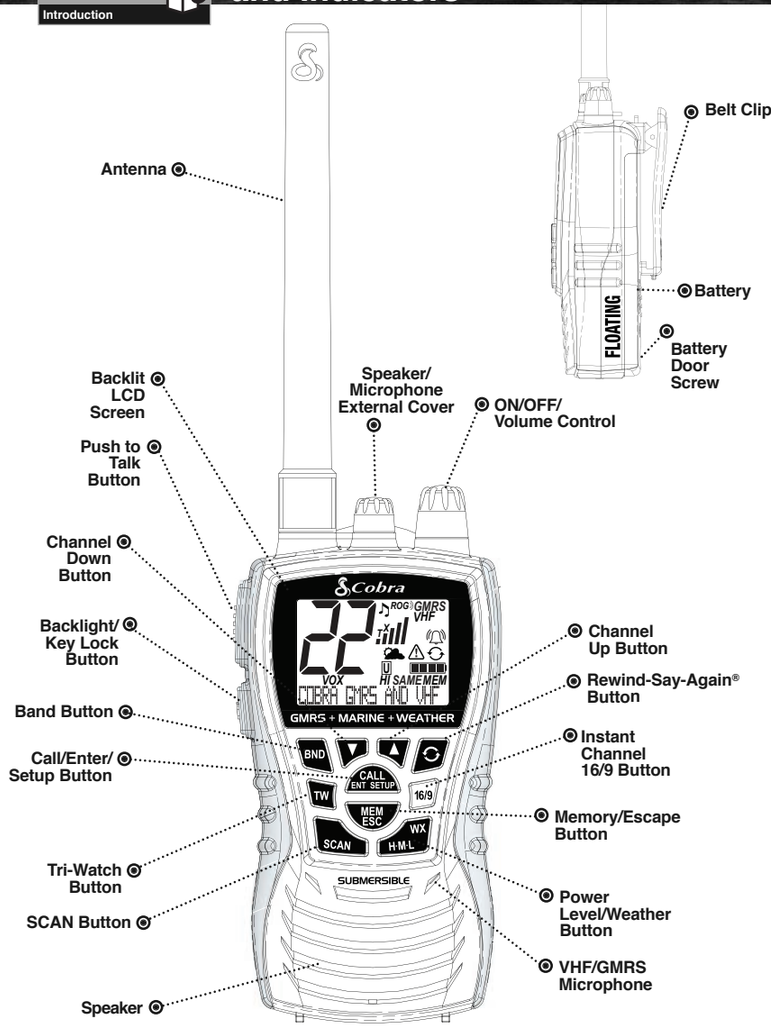
For Assistance Outside the U.S.A.

Contact Your Local Dealer

6500 West Cortland Street
Chicago, Illinois 60707 USA
www.cobra.com

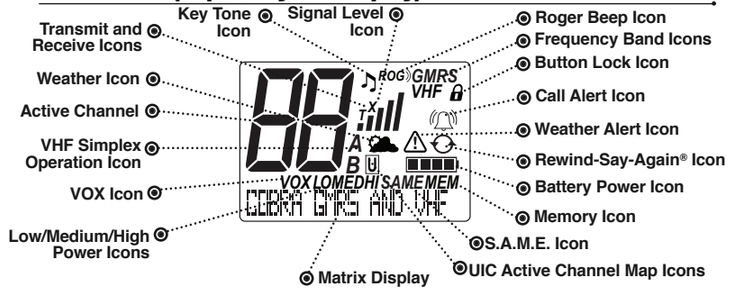
Introduction

Radio Controls and Indicators



Backlit LCD Screen and Product Features

Backlit LCD (Liquid Crystal Display) Screen



Product Features

Power Settings
Selectable power settings produce 1, 3 or 6 Watts (marine) and 1, 3 or 4.5 Watts (GMRS) of output power for near or distant calling.

USA/International/Canada Channels
Allows operation on any of the three (3) different channel maps established for these areas.

All NOAA Weather Channels
Instant access to all National Weather Channels, 24 hours a day.

Submersible to JIS7/IPX7 Standards
Waterproof to 3.3 ft (1 m) of water for 30 minutes.

Button/Key Lock
Prevents accidental setting changes when button lock is set.

Channel Scan/Memory Scan
Use to scan through unlimited channels or memory locations to find conversations in progress.

Matrix Display
The display at the bottom of the LCD screen displays text letting the user know the current radio mode, function or operation.

AA Battery Compatible
Good for emergency backup.
Includes AA battery tray (P/N CM 110-024).

Instant Channel 16/9
Provides instant access to priority Channel 16 and calling Channel 9.

Tri-Watch
Use to monitor three (3) channels at once — Channel 16 and two (2) programmable channels.

Floating
This radio will float if dropped overboard. Must use included battery to float.

120V/12V Charger Included
Use to charge battery pack, at home, in a car or in a boat.

Product Features

Product Features (continued)

Bands
Dual VHF (Very High Frequency) and GMRS (General Mobile Radio Service) bands allow you to use different frequencies while using this radio either on land or water. VHF can be used for two-way vessel-to-vessel and vessel-to-shore station communications.
GMRS can be used for small group communication such as in a general residential area or during recreational group outings. Note: GMRS radio usage requires an FCC License.

Rewind-Say-Again®
Replays missed VHF and GMRS calls.

Locking Desktop Charger
Holds the radio or battery in place while charging. Vertical or horizontal mounting.

Call Tones (Selectable)
10 selectable call tones

Emergency Weather Alert with SAME
Can alert you with an audible tone and visual alarm if threatening weather is nearby. The SAME alerts provide you with additional alerts for specific local areas.

Speaker/Mic Jack
Allows connecting optional Cobra Lapel Speaker/Mic and other Cobra accessories.

Unlimited Memory Channels
Allows programming of unlimited VHF and GMRS memory channels.

15 GMRS Channels
Seven (7) shared with GMRS/FRS and eight (8) GMRS only.

121 Privacy Codes
Allows semi-secure communications, creating up to 1815 privacy combinations (38 CTCSS codes-83 DCS codes).

Signal Strength Meter
Shows the strength of incoming or outgoing signals.

Noise Canceling Microphone
Reduces effect of environmental noise when speaking.

Illuminated Buttons
Allows high visibility of all function buttons.

Roger Beep Tone (Selectable)
Confirmation tone indicates the completion of the user's transmission and signals to others it is clear to talk. On or Off selectable.

BURP
The Cobra exclusive BURP feature expels water from the speaker grill if the unit is dropped in the water or is subjected to extreme rain and weather.

Notes

Left blank intentionally for your notes

Table of Contents

Important Safety Information

Important Safety Information

Before installing and using your Cobra VHF/GMRS Dual Band radio, please read these general precautions and warnings.

Warning and Notice Statements

To make the most of this radio, it must be installed and used properly.
Please read the installation and operating instructions carefully before installing and using the radio. Special attention must be paid to the **WARNING** and **NOTICE** statements in this manual.

WARNING
Statements identify conditions that could result in personal injury or loss of life.

NOTICE
Statements identify conditions that could cause damage to the radio or other equipment.

Safety Training Information

This Cobra VHF/GMRS Dual Band radio also complies with the following guidelines and standards regarding RF energy and electromagnetic
energy levels as well as evaluation of those levels for human exposure:

- FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields — RF and Microwave.
- Industry Canada RSS-102-Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency bands).

  Conformité d'exposition de la fréquence du Canada RSS-102-Radio d'industrie (rf) de l'appareillage de communication par radio (toutes les bandes de fréquence).

General Precautions

General Precautions

The following **WARNINGS** and **NOTICE** information will make you aware of RF exposure hazards and how to assure you operate the radio within the FCC RF exposure limits established for the radio.

WARNINGS
Your radio generates electromagnetic RF (radio frequency) energy when it is transmitting. To ensure that you and those around you are not exposed to excessive amounts of that energy, **DO NOT** touch the antenna when transmitting. **KEEP** the radio at least two (2) inches (5 cm) away from yourself and others when transmitting.

DO NOT operate with more than a duty cycle of 5% transmit, 5% receive and 90% standby. The radio is transmitting when the **Talk** button is pressed and the transmit information shows on the LCD screen.

ALWAYS use only Cobra authorized accessories.

DO NOT operate the radio in an explosive atmosphere, near blasting sites, or in any area where signs are posted prohibiting radio transmissions.

NEVER place the transceiver or microphone/speaker where they might interfere with operation of your vessel or cause injury.

DO NOT allow children or anyone unfamiliar with proper procedures to operate the radio without supervision.

Failure to observe any of these warnings may cause you to exceed FCC RF exposure limits or create other dangerous conditions.

Industry Canada Antenna Notice

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Avis d'antenne du Canada d'industrie

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée quivalente (p.i.r.e.) ne dépassepas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

General Precautions

NOTICE
Your radio is waterproof only when the batteries are properly installed.

AVOID using or storing the radio at temperatures below -4˚F (-20˚C) or above 140˚F (60˚C).

KEEP your radio at least 3 ft (0.9 m) away from your vessel's magnetic navigation compass.

DO NOT attempt to service any internal parts yourself. Have any necessary service performed by a qualified technician.

This radio is supplied with a lithium-ion (LiON) rechargeable battery pack.

- Use only the Cobra charger to recharge lithium-ion (LiON) batteries in the radio.
- Do not short circuit the battery pack.
- When replacing the batteries, dispose of the old batteries properly. Batteries may explode if disposed of in a fire.

Changes or modifications to your radio MAY VOID its compliance with FCC (Federal Communications Commission) rules and make it illegal to use.

Recommendations for Marine Communication

The frequencies your radio uses are set aside to enhance safety afloat and for vessel navigation and operational messages over a range suitable for nearshore voyages. If the 6 watt maximum output of your radio is not sufficient for the distances you travel from the coast, consider a higher powered handheld or installing a Cobra Marine fixed mount radio with up to 25 watts of output power. (Visit www.cobra.com or your local dealer for model availability.)

If traveling far offshore, you should consider adding even more powerful radio equipment such as HF single side band or satellite radio for your vessel.

The U.S. Coast Guard does not endorse cellular telephones as substitutes for marine radios. They generally cannot communicate with rescue vessels and, if you make a distress call on a cellular telephone, only the party you call will be able to hear you. Additionally, cellular telephones may have limited coverage over water and can be hard to locate. If you do not know where you are, the Coast Guard will have difficulty finding you if you are using a cellular telephone.

However, cellular telephones can have a place on board where cellular coverage is available — to allow social conversations and keep the marine frequencies uncluttered and available for their intended uses.

Radio Check Procedure

Sea Tow Automated Radio Check (ARC) System

Please try the Sea Tow Automated Radio Check service. Areas where the safety check service is available include the East Coast, Gulf of Mexico, and Southern California, as well as in select inland regions. The first and only boating safety program of its kind, the Sea Tow Automated Radio Check service is fully automated and allows 24 hour a day automatic responses to radio check calls.

Conducting a radio check through the Sea Tow Automated Radio Check service couldn't be simpler. All boaters need to do is tune their VHF radios to Channel 24, 25, 26, 27 or 28, depending on the region, key the mic, and ask for a radio check. The Automated Radio Check system responds to each radio check with an automated reply, and also replays to the boater's original radio transmission, allowing him or her to assess the strength of the signal and confirm the VHF radio is in good working order.

To find the Sea Tow Automated Radio Check service channel in an area, owners should visit http://www.seatow.com/arc. The web page links to an instructional video demonstrating how to use the service step by step.

VHF Marine Radio Procedures

Maintain Your Watch

Whenever your boat is underway, the radio must be turned On and be tuned to Channel 16 except when being used for messages.

Power

Try 1 watt first, if the station being called is within a few miles. If there is no answer, switch to 3 watts and call again. You have the ability to go up to 6 watts of output power to increase your calling distance. Remember, the lower wattage outputs will conserve your battery and minimize interference to other users.

Calling Coast Stations

Call a coast station on its assigned channel. You may use Channel 16 when you do not know the assigned channel.

Calling Other Vessels

Call other vessels on Channel 16 or on Channel 9. (Channel 9 is preferred for recreational vessel use.) You may also call on ship-to-ship channels when you know that the vessel is listening on a ship-to-ship channel.

Initial Calling on Channel 16 or 9

The use of Channel 16 is permitted for making initial contact (hailing) another vessel. The limits on calling must be followed. Be reminded, Channel 16's most important function is for Emergency Messages. If for some reason, Channel 16 is congested, the use of Channel 9, especially in U.S. waters, may be used as the initial contact (hailing) channel for non-emergency communication.

Limits on Calling

You must not call the same station for more than 30 seconds at a time.
If you do not get a reply, wait at least two (2) minutes before calling again.
After three (3) calling periods, wait at least 15 minutes before calling again.

Change Channels

After contacting another station on a calling channel, change immediately to a channel which is available for the type of message you want to send.

Station Identification

Identify, in English, your station by your FCC call sign (if available), vessel name and the state registration number, at both the beginning and at the end of the message.

Prohibited Communications

You **MUST NOT** transmit:

- False distress or emergency messages.
- Messages containing obscene, indecent or profane language.
- General calls, signals or messages (messages not addressed to a particular station) on Channel 16, except in an emergency or if you are testing your radio.
- When you are on land.

Voice Calling

You are required to listen to Channel 16 while standing by. Channel 16 is the distress and safety channel used for establishing initial contact with another station and for emergency communication. The Coast Guard also monitors Channel 16 for safety purposes for everyone on the water.

NOTE
Channel 9 may be used by recreational vessels for general-purpose calling. This frequency should be used whenever possible to help relieve congestion on Channel 16. The Coast Guard generally does not make urgent marine information broadcasts or weather warnings on Channel 9. Boaters are still asked to “keep watch” on Channel 16 whenever the radio is turned on and not in use with another station.

To call another vessel or shore installation (e.g, lock or bridge tender):

- Make sure the radio is On.
- Make sure you are in standby listening mode on Channel 16. Make sure Channel 16 is not in use.
- When the channel is open (quiet), press the **Talk** button and call a vessel. Hold the radio or microphone several inches from your face and speak clearly and distinctly in a normal voice tone. Say “name or station being called,” “THIS IS [your vessel name or call sign].”
- Once contact is made, you must leave Channel 16 and go to another working channel. See channel listing on page 60.

For Example

The vessel Corsair is calling the vessel Vagabond:

Corsair: “Vagabond, this is Corsair. Over.”

Vagabond: “Please switch and answer on Channel 68 (or any proper working channel). Over.”

Corsair: “Switching to Channel 68. Over.”

Introduction
Voice Calling

- If the other does not respond, wait two (2) minutes and repeat. You are permitted to attempt contact three (3) times, two (2) minutes apart. If you still have not made contact, wait 15 minutes before trying again.
- After communications are completed, each vessel must sign off with its call sign or vessel name and the word “out” and return to Channel 16.

NOTE
For best sound quality at the station you are calling, hold the microphone on the front of the radio at least 2 in. (51 mm) from your mouth and slightly off to one (1) side. Speak in a normal tone of voice.

NOTE
“Over and Out”
The most commonly misused procedure words are “over and out” within the same transmission. “Over” means you expect a reply. “Out” means you are finished and do not expect a reply.

Radiotelephone Calls

Radiotelephone Calls

Boaters may make and receive radiotelephone calls to and from any number on the telephone network by using the services of public coast stations. Calls can be made — for a fee — between your radio and telephones on land, sea and in the air. See the Appendix for the public correspondence (marine operator) channels.

If you plan to use these services, consider registering with the operator of the public coast station that you plan to work through. These services can provide you with detailed information and procedures to follow.

NOTICE
You may disclose privileged information during a radiotelephone call. Keep in mind that your transmission is **NOT** private, as it is on a regular telephone. Both sides of the conversation are being broadcast and can be heard by anyone who has a radio and tunes to the channel you are using.

Emergency Messages and Distress Procedure

Emergency Messages and Distress Procedure

The ability to summon assistance in an emergency is the primary reason to have a VHF marine radio. The marine environment can be unforgiving, and what may initially be a minor problem can rapidly develop into a situation beyond your control.

The Coast Guard monitors Channel 16, responds to all distress calls, and coordinates all search and rescue efforts. Depending on the availability of other capable vessels or commercial assistance operators in your vicinity, Coast Guard or Coast Guard Auxiliary craft may be dispatched.

In any event, communicate with the Coast Guard as soon as you experience difficulties and before your situation becomes an emergency. Use the emergency message procedures only after your situation has become grave or you are faced with a sudden danger threatening life or property and requiring immediate help. Use Channel 16 to communicate your emergency message. Make sure you transmit on high power. If you are merely out of gas, do not send an emergency message. Drop your anchor and call a friend or marina to bring the fuel you need or to give you a tow.

Emergency Messages and Distress Procedure

Marine Emergency Signals

The three (3) spoken international emergency signals are:

MAYDAY

The distress signal **MAYDAY** is used to indicate that a station is threatened by grave and imminent danger and requests immediate assistance.

PAN

The urgency signal **PAN** is used when the safety of the vessel or person is in jeopardy. (This signal is properly pronounced pahn.)

SECURITE

The safety signal **SECURITE** is used for messages about the safety of navigation or important weather warnings. (This signal is properly pronounced see-cure-ee-tay.)

When using an international emergency signal, the appropriate signal is to be spoken three (3) times prior to the message.

If You Hear a Distress Call

You must give any message beginning with one (1) of these signals priority over any other messages. ALL stations MUST remain silent on Channel 16 for the duration of the emergency unless the message relates directly to the emergency.

If you hear a distress message from a vessel, stand by your radio. If it is not answered, YOU should answer. If the distressed vessel is not nearby, wait a short time for others who may be closer to acknowledge. Even if you cannot render direct assistance, you may be in a position to relay the message.

Introduction

Emergency Messages and Distress Procedure

Marine Distress Procedure

Speak slowly — clearly — calmly.

1. Make sure your radio is On.
2. Select Channel 16.
3. **Press Talk button and say:**
   "MAYDAY — MAYDAY — MAYDAY."
   (Or "PAN — PAN — PAN,"
   or "SECURITE — SECURITE — SECURITE.")
4. **Say:**
   "THIS IS [your vessel name or call sign]," repeated three (3) times.
5. **Say:**
   "MAYDAY (or "PAN" or "SECURITE")
   [your vessel name or call sign].
6. **Tell where you are:**
   (what navigational aids or landmarks are nearby).
7. State the nature of your distress.
8. State the kind of assistance needed.
9. Give number of persons aboard and conditions of any injured.
10. Estimate present seaworthiness of your vessel.
11. Briefly describe your vessel (length, type, color, hull).
12. **Say:**
    "I WILL BE LISTENING ON CHANNEL 16."
13. **End message by saying:**
    "THIS IS [your vessel name or call sign]. OVER."
14. Release **Talk** button and listen. Someone should answer.
    If not, repeat the call, beginning at step 3 above.

Keep the radio nearby. Even after your message has been received, the Coast Guard can find you more quickly if you can transmit a signal for a rescue boat to hone in on.

Emergency Messages and Distress Procedure

For Example

"Mayday — Mayday — Mayday"

"This is Corsair — Corsair — Corsair" [or "IL 1234 AB," repeated three (3) times]

"Mayday Corsair (or IL 1234 AB)"

"Navy Pier bears 220 degrees magnetic — distance 5 miles"

"Struck submerged object and flooding — need pump and tow"

"Four (4) adults, three (3) children aboard — no one injured"

"Estimate we will remain afloat one-half hour"

"Corsair (or IL 1234 AB) is 26 ft sloop with blue hull and tan deck house"

"I will be listening on Channel 16"

"This is Corsair (or IL 1234 AB)"

"Over"

It is a good idea to write out a script of the message form and post it where you and others on your vessel can see it when an emergency message needs to be sent.

Specific Area Message Encoding (SAME) Alerts

Specific Area Message Encoding (SAME) Alerts

The MR HH450 DUAL radio is capable of receiving **Specific Area Message Encoding (SAME) Alerts**. During an NWR weather **SAME** alert, a code for your specific location will alert you to deteriorating weather conditions in a preprogrammed specific area or a specific event such as a Severe Thunderstorm Watch or Tropical Storm Warning. There are over 900 National Weather Radio (NWR) service stations using broadcast frequencies that transmit **SAME** alerts. You must program your county, parish or independent city or marine area into the radio.

NOTE
DO NOT program your radio for a louder or clearer station not designated as a **SAME** channel. You will not receive the local desired alerts.

The NWR service will then alert you **only** of weather and other emergencies for all areas programmed on this radio.

- When an NWR office broadcasts a warning, watch or non-weather emergency, it also broadcasts a digital **SAME** code that may be heard as a very brief static burst, depending on the characteristics of the radio. This **SAME** code contains the type of message; county(s) affected, and message expiration time.
- If programmed correctly, this radio will receive the **weather** channel so you can listen to the NWR **SAME** message. You will hear the 1050 Hz warning alarm tone as an attention signal, followed by the broadcast message.
- At the end of the broadcast message, you will hear a brief digital end-of message static burst followed by a resumption of the NWR broadcast cycle.

SAME coverage areas are defined within the "NWR Broadcast Service Area" and are comprised of named counties, boroughs, metropolitan areas or portions thereof. NWR "Broadcast Service Area" coverage by State can be found at http://www.nws.noaa.gov/nwr or by telephone at 1-888-NWRSAME (1-888-697-7263).

The information at the following website, http://www.nws.noaa.gov/nwr/indexnw.htm#sametable, will help to program the **SAME** alert county codes and respective frequencies into this radio. This site also lists **SAME** code Marine zones for bounded and named water areas.

Included in this Package

Included in this Package

You should find all of the following items in the package with your Cobra VHF/GMRS radio:

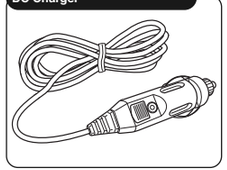
Radio

Drop-In Battery Charger

AC Charger

For connection to 120-volt power source.

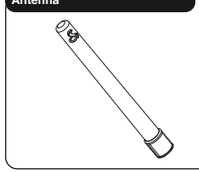
DC Charger



For connection to 12-volt power sources.

LiON Battery Pack

Antenna

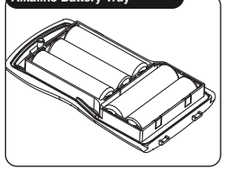


Operating Instruction Manual

Spring-Loaded Belt Clip

Wrist Strap

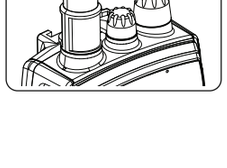
Alkaline Battery Tray



Install/Remove Antenna

Install/Remove Antenna

Antenna



1. To install the antenna turn the antenna into the radio clockwise to tighten. Do not overtighten.
2. To remove the antenna turn the antenna counterclockwise.

This radio transmitter IC: 906A-MRHH450 has been approved by Industry Canada to operate with the supplied antenna. Other antennas are strictly prohibited for use with this device.

Cet émetteur radio IC: 906A-MRHH450 a été approuvé par Industrie Canada pour fonctionner avec l'antenne fournie. D'autres antennes sont strictement interdits pour une utilisation avec cet appareil.

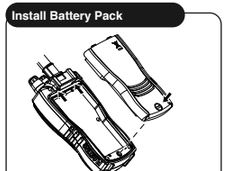
Batteries and Charger

LiON Battery Pack

The radio is shipped with a sealed lithium-ion (LiON) battery pack (P/N CM 110-026) that is rechargeable.

WARNING
The charger provided for this radio is only to be used to charge the battery pack provided. Do not charge any other type of batteries in the charger as fire, explosion or battery damage will occur. Avoiding extreme room temperatures will also help prolong the life of the battery pack for the radio.

Install Battery Pack

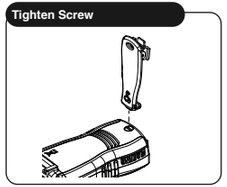


When your rechargeable batteries begin to discharge too quickly, it is time to install a new battery pack. Your radio will also operate with five (5) high-quality AA alkaline batteries, using the included alkaline battery tray.

Installing the Battery Pack

1. Position the battery pack over the back of the radio.
2. Engage the battery pack into the radio by sliding to the top until battery pack is fully seated against radio housing.
3. Tighten the screw using the end of the belt clip to secure the battery pack to the radio. Do not overtighten. Only use the end of the belt clip to tighten the screw.

Tighten Screw



Wrist Strap and Belt Clip

Wrist Strap and Belt Clip

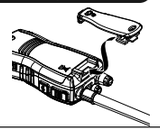
Belt Clip

Belt Clip

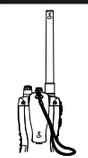
Use the spring-loaded belt clip to carry the radio on your person.

1. Slide the belt clip into the guide channel on the back of the radio until it is locked in place.
2. To attach the wrist strap, insert it through the hole at the top of the belt clip, feed it through the looped end and pull tight to secure to the belt clip.
3. Press open the belt clip, slide it over the belt and release the clip.
4. To remove the belt clip from the radio press the tab on the belt clip, which unlocks the clip, and slide it out.

Insert Belt Clip onto Radio



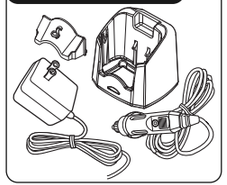
Wrist Strap Attachment



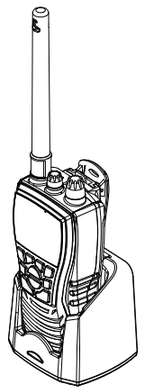
Secure Radio

Batteries and Charger

Power Sources



Initial Battery Charge



Initial Charge

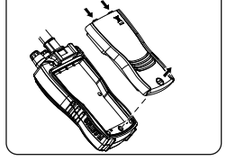
The Cobra-provided LiON battery pack may be charged at home, in a car or in a boat using the appropriate 12V or 120V power cord with the charger.

1. Insert one (1) of the power cords into the back of the drop-in charger.
2. Insert the other end of the power cord into the appropriate 12V or 120V power source.
3. Remove battery pack spacer from the charger and insert the entire radio/battery into the charger. The metal charge contacts on the battery will contact the mating prongs in the charger to transfer the charging current.
4. Observe that the red light on the front of the charger glows to indicate that the battery pack is properly seated and the charger is operating.
5. Allow the batteries to charge for five (5) to six (6) hours before use. The light will change back to green when the battery is fully charged.

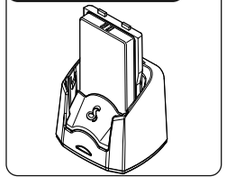
WARNING
Only the rechargeable LiON battery pack can be recharged. You MUST use one of the charging devices provided with this radio. Do not substitute any other type of charging adapter or charger base for this radio. Battery damage, fire or explosion may result. It is equally important to prevent the lithium-ion (LiON) battery pack from freezing to obtain best performance from the battery pack.

NOTE
If the drop-in charger is used on a boat, Cobra recommends you attach it to a horizontal shelf or vertical bulkhead (using the screw holes provided) to prevent possible damage due to the boat rolling or pitching. The charging base has been designed to hold the battery pack in place during rough sea conditions.

Remove Battery



Battery Pack Charging Only



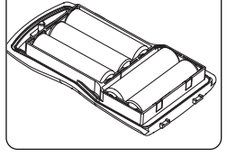
To Remove Battery Pack from Radio

1. Loosen the screw on the back of the battery pack.
2. Lift the bottom of the battery pack slightly to remove it from the radio housing.
3. Pull battery pack out of the radio housing.

NOTE
The LiON battery pack can also be charged in the battery charger without being installed in the radio. Insert the spacer into the battery charger to support the battery pack during this charging process. Follow the same procedures in “Initial Charge” to charge the battery pack.

NOTICE
Lithium-ion (LiON) batteries are toxic. Please dispose of properly. Some marine suppliers and electronics retailers accept old battery packs for recycling and some municipal waste disposal agencies have special provisions for battery disposal.

Alkaline Battery Tray



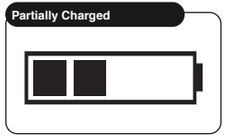
Alkaline Batteries

The alkaline battery tray acts as a backup or “Emergency” power source should the battery pack run low on power and need to be recharged. The radio will transmit at full power when using five (5) new AA alkaline batteries.

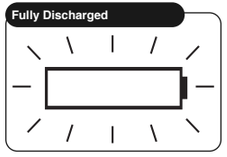
WARNING
Never attempt to recharge alkaline batteries. They are not made to be recharged, and should be disposed of in a proper manner.

Fully Charged

Partially Charged



Fully Discharged



Maintaining the Battery Charge

As you use your radio, the battery power icon will show the battery power remaining. When the icon begins to flash, it is time to recharge or change the batteries.

NOTE
Radio will continue to receive signals when blinking but cannot transmit.

NOTICE
Use only the drop-in charger provided by Cobra. Do not use the charger with alkaline batteries; only the LiON battery pack is rechargeable. Spent alkaline batteries must be discarded and replaced.

It is a good idea to keep a set of fresh, high-quality AA alkaline batteries with your radio. Should the rechargeable battery pack become discharged and no electrical power source is available, you can insert the included alkaline battery tray with fresh alkaline batteries and continue to use your radio.

HH450 Radio

Getting Started

Refer to the foldout at the front of this manual to identify the various controls and indicators on your radio. Throughout this manual you will be instructed to “Press” or to “Press and Hold” various buttons (except “Push to Talk”) on the radio. “Press” means a momentary press of approximately one (1) second. “Press and Hold” means to hold the button down for approximately two (2) seconds.

Whenever you press any button except the **Talk** button on your radio, a brief tone (beep) (if key tones are selected On) will sound to confirm the button press. With all button presses, the appropriate icon will appear on the LCD and the backlight will turn On. The backlight will stay On for 10 seconds after the button is released.

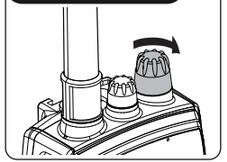
At times, you will hear two (2) other sounds. Two (2) beeps will sound to confirm your setting changes and three (3) beeps will sound to notify you of an error.

Common Radio Functions

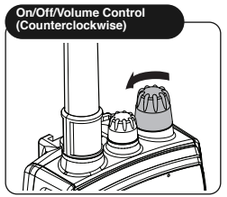
The following procedures define common operating functions of the radio when in **Marine Standby**, **GMRS Standby**, or **Weather (WX) Standby** modes.

Power/Volume Control

On/Off/Volume Control (Clockwise)



On/Off/Volume Control (Counterclockwise)



Power On/Off Control

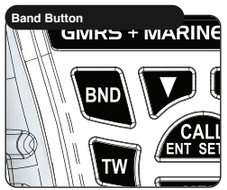
The **On/Off/Volume** control is located at the upper right side of the radio. Turning the **On/Off/Volume** control past the detent position will turn the radio On or Off.

Volume Control

Volume is controlled by turning the **On/Off/Volume** control.

- To increase the volume, turn the **On/Off/Volume** control clockwise.
- To decrease the volume, turn the **On/Off/Volume** control counterclockwise.

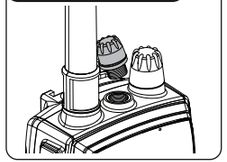
Band Button



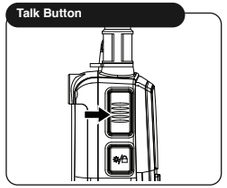
Band Control

The **Band** button allows you to select between the **Marine (VHF), GMRS and weather bands**. Press and release the band button to quickly toggle between the three radio bands.

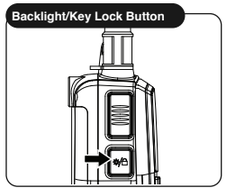
Speaker/Mic Port



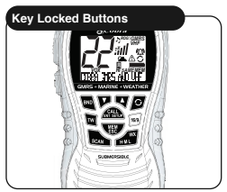
Talk Button



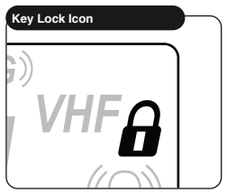
Backlight/Key Lock Button



Key Locked Buttons



Key Lock Icon



Radio Speaker and Microphone

The internal **Radio Speaker** and **Microphone** are located on the bottom front face of the radio below the lower control buttons.

An optional **Speaker/Microphone** port is located at the top of the radio between the antenna and the **Power/Volume** control. Unthread the **Speaker/Microphone** port cover to access and install an optional Cobra speaker or microphone into this port.

Talk Button

Press and hold the **Talk** button to transmit messages. Release the **Talk** button to stop transmitting.

Backlight/Key Lock Button

To Display the Backlight Momentarily:

Press the **Backlight/Key Lock** button. The backlight will remain On for 10 seconds. If the backlight is already On, another press of the **Backlight/Key Lock** button will turn it Off.

Key Lock

To prevent accidental changes to your settings, you can lock all of the following buttons:

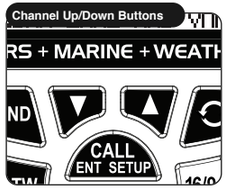
- **Channel Up** Button
- **Channel Down** Button
- **Band** Button
- **REWIND** Button
- **SCAN** Button
- **MEM/ESC** Button
- **WX/H-M-L** Button
- **16/9** Button
- **TRI-WATCH** Button
- **Call/Enter/Setup** Button

To Lock or Unlock the Buttons:

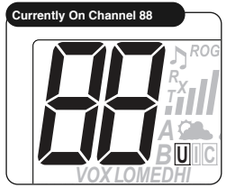
Press and hold the **Backlight/Key Lock** button for two (2) seconds. The **Key Lock** icon will appear or disappear in the LCD. When **Key Lock** is On, pressing any of the listed buttons on the front of the radio will result in a three (3) beep error message.

Both the **Backlight/Key Lock** button and the **Talk** button are active — you can **Receive (Rx)** or **Transmit (Tx)** a message with **Key Lock** On, but you cannot change the channel.

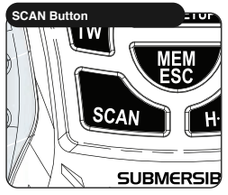
Channel Up/Down Buttons



Currently On Channel 88



SCAN Button



Channel Up/Down Buttons

Your radio will **Receive (Rx)** and **Transmit (Tx)** VHF/GMRS signals on the channel indicated on the LCD display. You can change the channel at any time using the **Channel Up/Down** buttons.

To Change Channels:

Press the **Channel Up/Down** button.

If you are on Channel 88, pressing the **Channel Up** button will advance to Channel 01. If you are on Channel 01, pressing the **Channel Down** button will advance to Channel 88. (GMRS highest channel is 22, then will advance to channel 1. Weather highest channel is 10, then advances to channel 1).

You can press and hold the **Channel Up/Down** button for fast advance. The beep sound will occur only at the first press of the button and not during fast advance.

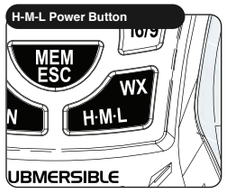
If the new channel selected is restricted to low power, the radio will automatically switch to **Low Power** mode and the **Low Power** icon will appear on the LCD.

If the radio is in the **Key Lock** mode, the channel will not change and the three (3) beep error signal will sound.

SCAN Button

Press and release the **SCAN** button to enter all scanning modes - Marine, GMRS and memory. See the **Advanced Operation** section has more details on using the Scan modes. The **SCAN** icon will display on the LCD display. Scanning begins at lower channels, and scans to higher channels. Press the **Channel Up/Down** button to change the scan direction.

H-M-L Power Button



High/Medium/Low (H-M-L) Power Button

Your radio can transmit selectively at 1, 3 or 6 (or highest allowed ERP setting in GMRS mode) watts of power. Cobra suggests you maintain the low power setting for short-range communications. You will conserve battery life and avoid overpowering nearby stations with a low power setting signal. Use the high power setting for long-range communications or when you do not receive a response to a signal sent at 1 watt.

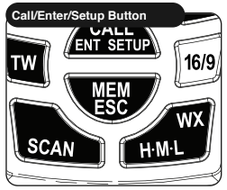
To Toggle Between H-M-L Power Modes:

Press and release the **H-M-L Power** button. The LCD will show which mode is in effect. Some channels are restricted for a maximum use of 1 watt. Your radio will automatically set the power to **Low Power** mode when you select those channels.

NOTE

Some channels, frequency bands and countries of use might not be able to operate in **High Power** mode and some channels are receive only.

Call/Enter/Setup Button

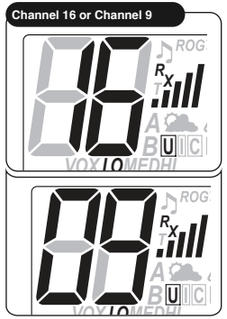


Call/Enter/Setup Button

The **Call/Enter/Setup** button has multiple functions. It is generally used in the following ways:

- Press and release to transmit your unique **Call Tone** signal to another radio.
- Press and hold to enter any **Setup** menu.
- Functions as an **Enter** button when making a selection in any **Setup** menu.

Channel 16 or Channel 9



Channel 16/9 Button

Channel 16/9 mode gives you quick access to calling Channel 16 and Channel 9 from any operational mode.

To Switch to Channel 16 or Channel 9:

1. Press the **Channel 16/9** button to change to Channel 16.
2. Press the **Channel 16/9** button again to change to Channel 9.
3. Press the **Channel 16/9** button a third time and return to the last used channel.

Setup Mode Programming

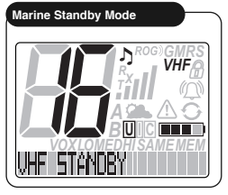
The following series of procedures is designed to allow you to set the programmable features of your radio. Correctly following these steps results in a minimal amount of radio setup programming time.

During setup programming, the matrix display will show text describing the programming action you are now performing.

NOTE

When in any of the **Setup** modes (**Marine** (VHF), **GMRS** or **Weather**), if you stop programming for longer than 15 seconds, your entry will be saved and the radio will go back to **Standby** mode. While in the **Setup** mode, you will not receive any signal reception except when setting squelch.

Marine Standby Mode



Marine (VHF) Mode Programming

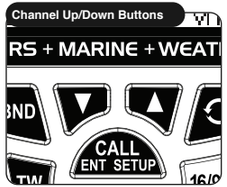
Programming these features will allow you to customize certain features of this radio to enhance your “On-Water” radio use.

Start from **Marine Standby** mode to begin **Marine (VHF) Setup** programming. Press and hold the **Call/Enter/Setup** button for two (2) seconds to enter the programming mode.

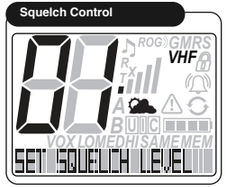
The mode programming follows this sequence:

- Squelch Level Set
- UIC Channel Map
- VOX On/Off
- Vox Sensitivity Level Set (this menu setting will be present when VOX is set to ON)
- Call Alert Tone/Vibrate Set
- Call Alert Tone Set
- Roger Beep On/Off
- Key Tone On/Off
- Rewind On/Off
- Priority 16 On/Off

Channel Up/Down Buttons



Squelch Control



Squelch Control

Squelch Control filters weak signals and radio frequency (RF) noise so that you will clearly hear the signals you want. The **Squelch Control** on this radio is set through the following keypad operation.

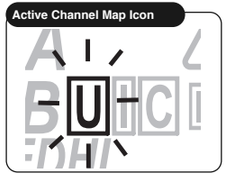
To Set Squelch Control:

1. With the power On, push and hold **Call/Enter/Setup** button to access the **Setup** menu.
2. Squelch control will be the first menu item to appear. Press the **Channel Up** and **Channel Down** buttons to set level. The signal level bar graph shows squelch level while you are in **Setup** mode on the squelch adjust function.
3. To adjust your squelch, press the **Channel Down** button until you hear a hissing sound, then press and release the **Channel Up** button until the hissing stops. This will establish a “Baseline” squelch.
4. By pressing the **Channel Up** button further, you will filter weak and medium strength signals. By pressing **Channel Down** button, you will receive weaker signals.
5. Press the **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

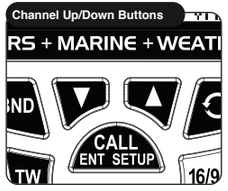
NOTE
If the **Squelch** is set so that you can hear a continuous hissing sound, the **Memory Scan** and **Tri-Watch** functions will be blocked.

Operating Your Radio
VHF Mode Programming

Active Channel Map Icon



Channel Up/Down Buttons

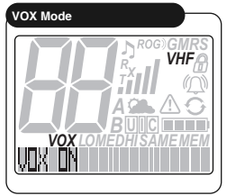


USA/International/Canada Channel Maps

Three (3) sets of VHF Channel Maps have been established for marine use in the USA, Canada, and the rest of the world (International). Most of the channels are the same for all three (3) maps, but there are definite differences (see table in the Appendix on page 62). Your radio has all three (3) maps built into it and will operate correctly in whichever area you choose.

To Set Channel Map Operating Area:

1. The **Channel Map** mode is the second mode on the **Marine (VHF) Setup** programming.
2. **U, I** and **C** will display, with the current setting (the **U** icon is the default) flashing.
3. Press **Channel Up/Down** button to select the **U, I** or **C** icon.
4. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.



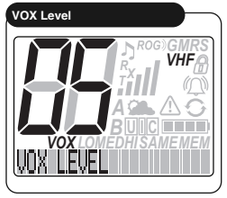
Voice Activated Transmit (VOX) Mode

In **VOX** mode, your radio can be used "hands-free," automatically transmitting when you speak. You can also set the **VOX** sensitivity level to fit the volume of your voice and avoid transmissions triggered by background noise.

To turn VOX Mode On or Off:

1. Display will show **VOX** icon and **ON** or **OFF** flashing.
2. Press **Channel Up/Down** button to select **ON** or **OFF**.
3. Press **Call/Enter/Setup** button to save this entry and move to the next setup programming mode.

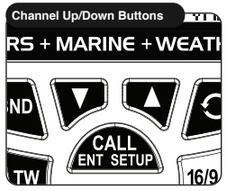
NOTE
Once set, this is a global setting when in all radio modes.



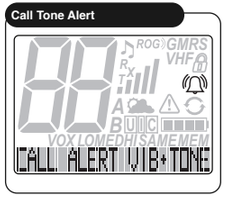
To set VOX Sensitivity Level:

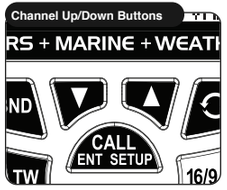
NOTE
VOX sensitivity level is only visible when **VOX** is On.

1. The display will show **VOX LEVEL** and the current level will be flashing.
2. Press **Channel Up/Down** button to change the Vox level of your choice. Remember, this selection is your voice sensitivity level during hands-free operation.
   - **05** - indicates a Low (quiet) voice setting.
   - **03** - indicates a Medium voice setting.
   - **01** - indicates a High (loud) voice setting.
3. Press **Call/Enter/Setup** button to save this entry and move to the next setup programming mode.



NOTE
VOX will be turned Off automatically when the radio is turned Off. This will avoid accidental transmissions.





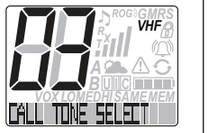
Call Alert

If **Call Alert** is set to On, the radio will alert you to a call from a compatible Cobra radio with a Call Alert.

Select the type of radio alert:

1. The display will show **CALL ALERT** and will be flashing **OFF, TONE, VIBRATE**, or **VIB+TONE**.
2. If **TONE, VIBRATE**, or **VIB+TONE** option is shown on the display then the appropriate **BELL, VIBRATE, shake bars** or **combination VibrAlert** icon will be displayed.
3. Press **Channel Up/Down** button to select the alert mode of your choice.
4. Press **Call/Enter/Setup** button to save this entry and move to the next setup programming mode.

Call Tone Select



Call Tone Select

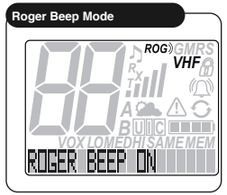
This setting will allow you to transmit a unique **Call Tone** alert to identify your radio when you transmit messages. You can select from one of 10 different **Call Tone** signals.

To Set Call Tone:

1. From the previous press of the **Call/Enter/Setup** button, the matrix will display **CALL TONE SELECT** and the display will flash the current **Call Tone** number (01 through 10).
2. Press the **Channel Up/Down** button to select a different **Call Tone**. An example of each call tone will sound for 1.5 seconds.
3. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

NOTE
Call Tones are not usually used for **Marine VHF** communications. We allow you to turn it On for your unique communication needs. It is only compatible with other Cobra VHF radios.

Roger Beep Mode



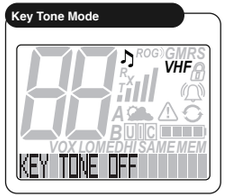
Roger Beep Mode

In **Roger Beep** mode, your listener will hear an audible tone when you release the **Talk** button. This alerts your listener that you are finished talking and it is OK for them to speak.

To Set Roger Beep On or Off:

1. Display will show **ROG** icon flashing and the matrix will display **ROGER BEEP ON** or **OFF**.
2. Press **Channel Up/Down** button to select **ON** or **OFF**. **ROG** will be displayed when On.
3. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

Key Tone Mode



Key Tone Mode

In **Key Tone** mode, an audible tone will sound each time a button is pressed or you change a setting.

To Set Key Tone On or Off:

1. Display will show **Key Tone** icon flashing and matrix will display **KEY TONE ON** or **OFF**.
2. Press **Channel Up/Down** button to select **ON** or **OFF**.
3. Press **Call/Enter/Setup** button to save entry.

NOTE
Once set, this is a global setting when in all radio modes.

Channel Up/Down Button

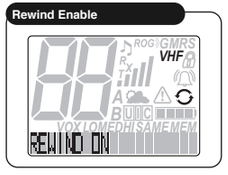
Rewind On/Off

If **Rewind** is enabled, the last 20 seconds of incoming audio is recorded and you can play back missed VHF calls by pressing the **Rewind** button.

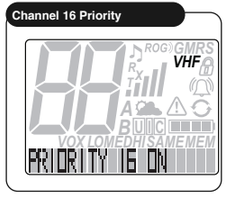
1. Display will show the **Rewind** icon and the matrix will display **REWIND ON** or **OFF**.
2. Press Channel Up/Down button to select **ON** or **OFF**.
3. Press **Call/Ent/Setup** button to save entry.

NOTE
Once set, this is a global setting when in all radio modes.

Rewind Enable



Channel 16 Priority



Channel 16 Priority Mode

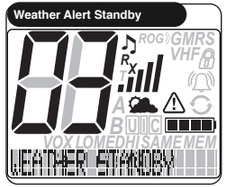
If **Priority 16** is turned on, during channel scan the radio will frequently check the **Channel 16 Safety and Distress** channel for calls.

To Set Priority 16 On or Off:

1. The display matrix will show **PRIORITY 16 ON** or **OFF**.
2. Press the **UP or DOWN** button to select On or Off.
3. Press **Call/Ent/Setup** button to save entry.

Weather (WX) Mode Programming

Weather Alert Standby



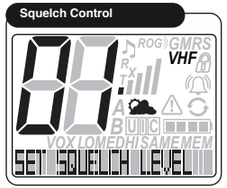
Programming these features will allow your radio to listen to all NOAA Hazard Alert radio channels. In this process, you will be programming the channel settings for the "Specific Area Message Encoding (SAME)" and "Emergency Alert Messages" sent by NOAA. See channels and frequencies listed on page 31. Start from **Weather Standby** mode to begin **Weather Alert Setup** programming. Momentarily Press the button to enter the programming mode.

Channel Up/Down Buttons

Squelch Control

Squelch Control filters weak signals and radio frequency (RF) noise so that you will clearly hear the signals you want. The **Squelch Control** on this radio is set through the following keypad operation.

Squelch Control



To Set Squelch Control:

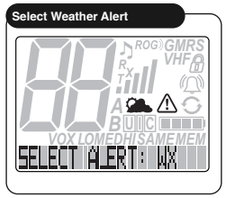
1. With the power On, momentarily press the **Call/Enter/Setup** button to enter the **Setu**p mode programming.
2. Squelch control will be the first menu item to appear. Press the **Channel Up** and **Channel Down** buttons to set level. The signal level bar graph shows squelch level while you are in **Setup** mode on the squelch adjust function.
3. To adjust your squelch, press the **Channel Down** button until you hear a hissing sound, then press and release the **Channel Up** button until the hissing stops.
4. Press the **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

Alert Functions

SAME is an advanced weather alert feature. Leave this set to **OFF** if you are not sure about your understanding of its operation. The weather mode can be set to respond to NOAA alerts in three ways:

- **OFF** - radio alerts are disabled.
- **WX** - radio will sound a max volume tone alert for 8 seconds when NOAA sends a 1050 Hz warning alert tone.
- **SAME** - radio will display the NOAA SAME alert message.

Select Weather Alert



1. Select **Alert** and either **OFF, WX** or **SAME** will flash in the display.

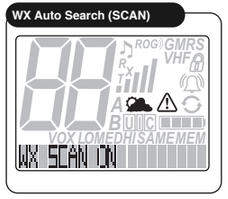
NOTE
If **WX Alert** is turned on, the radio will receive NOAA voice alerts from a wide geographic area around you.

NOTE
If **SAME Alert** is turned on, the radio will receive detailed NOAA alerts from a geographic area immediately around you.

2. Press **Channel Up/Down** button to select **OFF, WX** or **SAME**.
3. Press the **Call/Enter/Setup** button to save entry and move to the next programming mode.

NOTE
Proceed to **SAME** programming section if **SAME** has been selected.

WX Auto Search (SCAN)



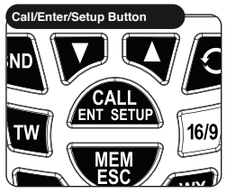
To Set WX Auto Search (SCAN) On or Off:

1. Display will show **WX Alert** icon and **SCAN**, **ON** or **OFF** is flashing.
2. Press **Channel Up/Down** button to select **SCAN**, **ON** or **OFF**.
3. Press the **Call/Enter/Setup** button to save entry.

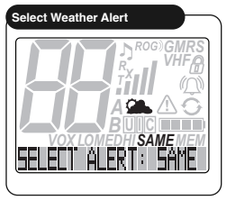
NOTE
When **WX Auto Search (SCAN)** is set to On, weather channel scanning will start automatically and scan all available weather channels. When the user-selected weather channel falls below the preset squelch level, the weather channel will change to a new weather channel under the following conditions:

- **WX Alert** is engaged.
- **WX** received signal level falls below a preset squelch on the user-selected weather channel and
  - radio is in **WX Standby** OR
  - radio is in **VHF** or **GMRS Standby** and there is no channel activity.

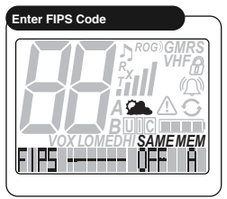
Call/Enter/Setup Button



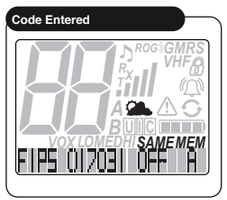
Select Weather Alert



Enter FIPS Code



Code Entered



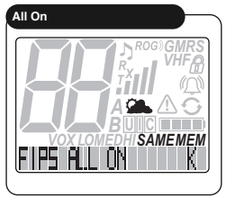
To Set SAME FIPS Code Programming:

1. From **Weather Standby** Mode, press **CALL/ENT/SETUP** key until the display matrix shows **SELECT ALERT:** and **WX, SAME, or OFF** will be flashing.
2. Press **Channel Up/Down** buttons to select **SAME**. The first memory location "A" will be displayed. Up to 10 **FIPS codes** can be entered A - J.
3. Press and release the **CALL/ENT/SETUP** button and the first FIPS memory A will be displayed. Use the **Channel Up/Down** buttons to select the FIPS memory location A-J.
4. Press the **Call/Enter/Setup** button to enter geographic weather locations as identified by **FIPS** (Federal Information Processing System) area in the United States.

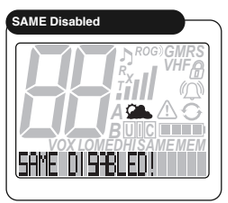
NOTE
FIPS codes identify geographic areas in the United States as shown on the Internet website: http://www.nws.noaa.gov/nwr/indexnw.htm.

5. The display will show " ------," or last entered **FIPS** code. One (1) digit in display will be flashing.
6. Press **Channel Up/Down** button to select first digit.
7. Press and release **Call/Enter/Setup** button to advance to next digit code. Press and release **MEM/ESC** button to back up. Repeating, press and release of the **MEM/ESC** button, will back up to the top level.
8. Continue steps 5 to 7 until all six (6) digits are entered.
9. Press the **Call/Enter/Setup** button to save the entered digits.

All On

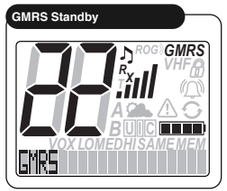


SAME Disabled



To Set SAME FIPS Code Programming continued**:**

10. Use the **Channel Up/Down** buttons to select:
    - **OFF** - entered FIPS code is not active or,
    - **ON** - entered FIPS code is active.
11. Press the **Call/Enter/Setup** button to save the memory.
12. Repeat steps 3 through 10 to enter up to 10 FIPS codes in memory.
13. When all of the codes are entered, use the **Channel Up/Down** buttons to move to memory K.
14. Press the **Call/Enter/Setup** button and select:
    - **ON** - all entered FIPS codes are set active,
    - **OFF** - all entered FIPS codes are set inactive, or
    - **OK** - all entered FIPS codes are correctly entered, some On and some Off.
15. At least **one** FIPS code must be entered and made active (ON) or the **SAME** mode is disabled. The radio will warn you if no FIPS codes are on.
16. Press the **Call/Enter/Setup** button to exit back to weather standy.



GMRS Mode Programming

The **GMRS** (General Mobile Radio Service) feature is a landmobile service available for short-distance, two-way communications in the USA. You must have a valid FCC license to communicate on these channels (see page 28).

Start from **GMRS Standby** mode to begin **GMRS Setup** programming. Press and hold the **Call/Enter/Setup** button for two (2) seconds to enter the programming mode.

Squelch Control

Squelch Control filters weak signals and radio frequency (RF) noise so that you will clearly hear the signals you want. The **Squelch Control** on this radio is set through the following keypad operation.

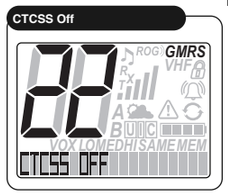
To Set Squelch Control:

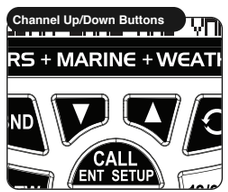
1. With the power On, push and hold **Call/Enter/Setup** button to access the **Setup** menu.
2. Squelch control will be the first menu item to appear. Press the **Channel Up** and **Channel Down** buttons to set level. The signal level bar graph shows squelch level while you are in **Setup** mode on the squelch adjust function.
3. To adjust your squelch, press the **Channel Down** button until you hear a hissing sound, then press and release the **Channel Up** button until the hissing stops. This will establish a “Baseline” squelch.
4. By pressing the **Channel Up** button further, you will filter weak and medium strength signals. By pressing **Channel Down** button, you will receive weaker signals.
5. Press the **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

NOTE
If the **Squelch** is set so that you can hear a continuous hissing sound, the **Memory Scan** and **Tri-Watch** functions will be blocked.

CTCSS and DCS Coding Mode

Continuous Tone Controlled Squelch System (CTCSS) and **Digital Coded Squelch (DCS)** coding are used in two-way radio systems. These are sub-audible frequencies or digital tones that are sent continuously with speech to engage other radios with this feature. This feature is generally used between talk groups on shared channels. Radios with the same subcode set will hear your transmission. Radios with both DCS and CTCSS set to Off or 00 will be able to hear your transmissions.





To Set CTCSS Code Entry:

1. Display will show **CTCSS** icon and **OFF** icon flashing.

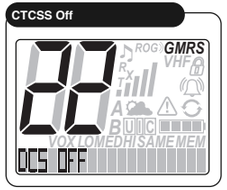
NOTE
If **CTCSS** was previously set to a **Code** number, display will show the current **GMRS** channel and flash the **CTCSS** icon and **Code** number.

2. Codes begin at **00 (OFF)** and go to **38**, followed by **00**, and return back to **01** again. The last used **GMRS** channel will be shown in the large digit display.

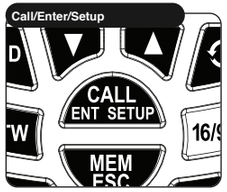
NOTE
If **CTCSS** is On, then **DCS** will be Off. If **DCS** is On, then **CTCSS** will be Off. The radio does this automatically.

3. Press **Channel Up/Down** button to change code number, or press and hold **Channel Up/Down** button to rapid advance (scroll).
4. Press **Call/Enter/Setup** button to save entry and move to the next setup programming mode.

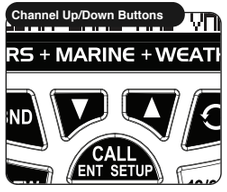
CTCSS Off



Call/Enter/Setup



Channel Up/Down Buttons



To Set DCS Code Entry:

1. Display will show **DCS** icon and **OFF** icon flashing.

NOTE
If **DCS** was previously set to a **Code** number, display will show the current **GMRS** channel and flash the **DCS** icon and **Code** number.

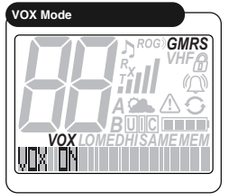
2. Codes begin at **01** and go to **38**, followed by **OFF**, and return back to **01** again. The last used **GMRS** channel will be shown in the large digit display.

NOTE
If **CTCSS** is On, then **DCS** will be Off. If **DCS** is On, then **CTCSS** will be Off. The radio does this automatically.

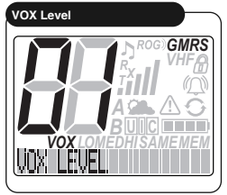
3. Press **Channel Up/Down** button to change code number, or press and hold **Channel Up/Down** button to rapid advance (scroll).
4. Press **Call/Enter/Setup** button to save entry and move to the next setup programming mode.

Operating Your Radio
GMRS Mode Programming

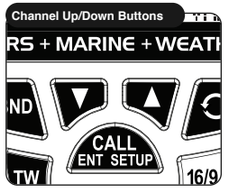
VOX Mode



VOX Level



Channel Up/Down Buttons



Voice Activated Transmit (VOX) Mode

In **VOX** mode, your radio can be used "hands-free," automatically transmitting when you speak. You can also set the **VOX** sensitivity level to fit the volume of your voice and avoid transmissions triggered by background noise.

To turn VOX Mode On or Off:

1. Display will show **VOX** icon and **ON** or **OFF** flashing.
2. Press **Channel Up/Down** button to select **ON** or **OFF**.
3. Press **Call/Enter/Setup** button to save this entry and move to the next setup programming mode.

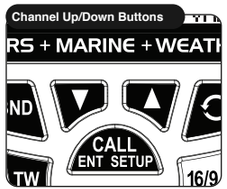
NOTE
Once set, this is a global setting when in all radio modes.

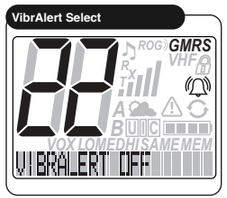
To set VOX Sensitivity Level:

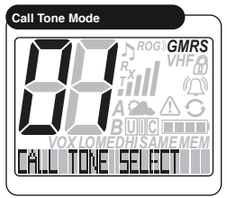
NOTE
VOX sensitivity level is only visible when **VOX** is On.

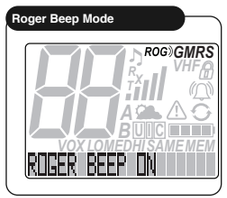
1. The display will show **VOX LEVEL** and **01** will be flashing.
2. Press **Channel Up/Down** button to change volume level of your choice. Remember, this selection is your voice sensitivity level during hands-free operation.
   - **05** - indicates a Low (quiet) voice setting.
   - **03** - indicates a Medium voice setting.
   - **01** - indicates a High (loud) voice setting.
3. Press **Call/Enter/Setup** button to save this entry and move to the next setup programming mode.

NOTE
VOX will be turned Off automatically when the radio is turned Off. This will avoid accidental transmissions.









VibrAlert Select

This setting will allow you to select whether your radio activates the VibrAlert shake in addition to the incoming call tone when receiving a call. Once the radio shakes, it will delay 20 seconds before shaking again to eliminate excessive VibrAlerts on a busy GMRS channel.

To Set VibrAlert:

1. From the previous press of the **Call/Enter/Setup** button, the matrix will display **VIBRALERT OFF**.
2. Press the **Channel Up/Down** button to select **VIBRALERT ON**. The **VibrAlert** icon will be activated on the display.
3. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

Call Tone Select

In **Call Tone** mode, you can select the tone the radio will use when transmitting a Call.

1. The display will show **Call Tone Select** and the current tone number will be flashing.
2. Press **Channel Up/Down** to select the tone you want to use.
3. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

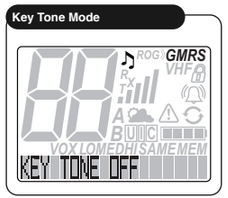
Roger Beep Mode

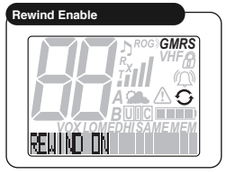
In **Roger Beep** mode, your listener will hear an audible tone when you release the **Talk** button. This alerts your listener that you are finished talking and it is OK for them to speak.

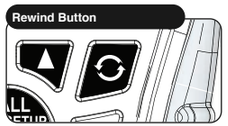
To Set Roger Beep On and Off:

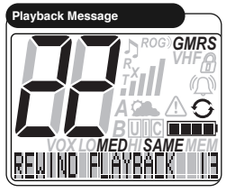
1. Display will show **ROG** icon flashing and the matrix will display **ROGER BEEP ON** or **OFF.**
2. Press **Channel Up/Down** button to select **ON** or **OFF**. **ROG** will be displayed when On.
3. Press **Call/Enter/Setup** button to save this entry and move to the next **Setup** mode programming.

NOTE
Once set, this is a global setting when in all radio modes.









Key Tone Mode

In **Key Tone** mode, an audible tone will sound each time a button is pressed or you change a setting.

To Set Key Tone On and Off:

1. Display will show **Key Tone** icon flashing and the matrix will display **KEY TONE ON** or **OFF.**
2. Press **Channel Up/Down** button to select **ON** or **OFF**.
3. Press **Call/Enter/Setup** button to save this entry.

NOTE
Once set, this is a global setting when in all radio modes.

Rewind On/Off

If **Rewind** is enabled, the last 20 seconds of incoming audio is recorded and you can play back missed VHF calls by pressing the **Rewind** button.

1. Display will show the **Rewind** icon and the matrix will display **REWIND ON** or **OFF**.
2. Press Channel Up/Down button to select **ON** or **OFF**.
3. Press **Call/Ent/Setup** button to save entry.

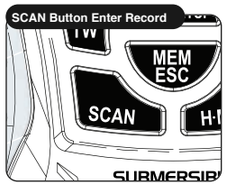
NOTE
Once set, this is a global setting when in all radio modes.

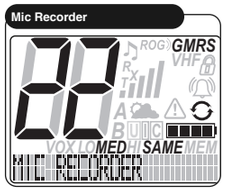
Use the Cobra exclusive **Rewind-Say-Again®** feature to replay or record the last 20 seconds of an incoming audio transmission.

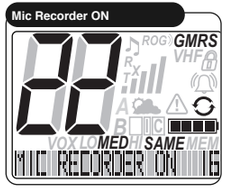
Example 1:
When engine noise, music or conversation creates too much noise to hear an inbound message clearly, press the **REW** button to hear the message a second time.

Example 2:
When listening to an urgent distress message of an excited caller with confusing background noise, press the **REW** button to hear the message a second time and get life saving information. Use this feature to record call details including position coordinates, call signs, registration numbers and store details that will help authorities locate the distressed vessel.

NOTE
Hold the **Rewind** button to lock the recording memory (the **Rewind** icon flashing) and save the currently recorded transmission.







Using Rewind-Say-Again® to Record VOICE Audio Transmission:

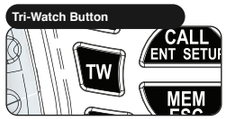
NOTE
If the record memory is locked (rewind icon flashing), press and hold the **REW** button to unlock.

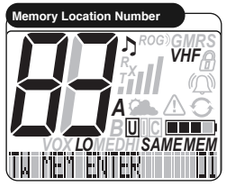
1. Press and hold **SCAN** button for two (2) seconds to enter **Record** mode. The matrix will display **MIC RECORDER**.
2. Press and hold **PTT** button to begin recording from radio microphone. The transmitter will turn off. The matrix will display **MIC RECORDER ON** and the seconds remaining will be shown in the lower right corner. If **PTT** button is released, recording stops. While recording, a 20-second countdown begins on display. When 20-second countdown time has ended, recording stops and two (2) beep tones will be heard.
3. Press and hold **SCAN** button again for two (2) seconds or press **MEM/ESC** button to cancel recording and return to last operation.

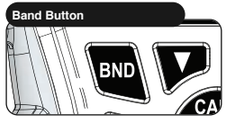
Tri-Watch Mode

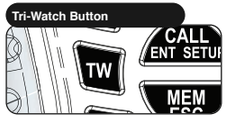
Tri-Watch mode gives you one (1) button access to scan a total of three (3) channels of most importance to you. Channel 16 is preprogrammed and will always be one (1) of the scanned locations. Two (2) other channels, either GMRS or VHF, of your choice can be stored in the radio. These channels can be edited and/or recalled during future engagements of **Tri-Watch** mode.

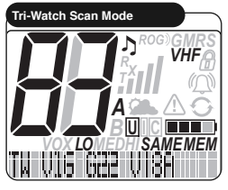
NOTE
The radio must be squelched for **Tri-Watch** mode to function. See page 18 for **Squelch** procedure.











Tri-Watch Setup

To Program or Edit the Tri-Watch Channels:

1. Press and hold the **TRI-WATCH** button from **Marine or GMRS Standby** mode for two (2) seconds to activate **Tri-Watch Setup** mode. The **MEM** icon on the display will turn On and the matrix will display **TW MEM ENTER 01**.

NOTE
The main channel number will flash to indicate channel position. If there is no input activity for 15 seconds, the radio will sound three (3) beeps and return to **GMRS** or **Marine Standby** mode.

2. Use the **Band** button to select Marine or GMRS channels.
3. Press **Channel Up/Down** button to select the desired **Tri-Watch** channel.
4. Press and release **TRI-WATCH** button or **Call/Enter/Setup** button to confirm entry.
5. Repeat steps 2 and 3 to program the remaining additional **Tri-Watch** memory channel.
6. After programming both **Tri-Watch** memory channels the radio will immediately engage **Tri-Watch** mode.

Using Tri-Watch

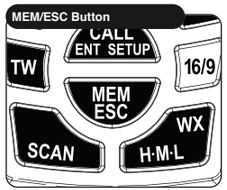
Tri-Watch Scan Mode:

1. From **Marine or GMRS Standby** mode, press the **TRI-WATCH** button. The **TW SCAN** will display on the matrix along with the three channels stored in the **Tri-Watch** memory.
2. The radio will scan through the three (3) **Tri-Watch** memory channels.
3. A signal on any one (1) of the three (3) channels will stop the scan for 10 seconds to allow you to listen to the traffic on that location.

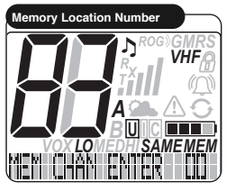
NOTE
After the **Tri-Watch** scan stops to monitor a channel, as long as you do not press any buttons within 10 seconds, your radio will automatically resume scanning the **Tri-Watch** channels.

4. Press the **Channel Up/Down** button to resume scanning the **Tri-Watch** channels or to change the scan direction.
5. To EXIT the **Tri-Watch** scan, press the **TRI-WATCH** button again, and the radio will return to **Marine or GMRS Standby** mode.

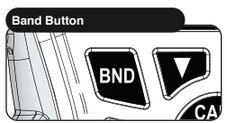
MEM/ESC Button



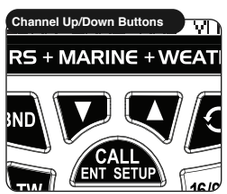
Memory Location Number



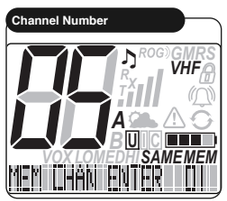
Band Button



Channel Up/Down Buttons



Channel Number



Memory Location Mode

Your radio has unlimited memory locations for storing your most frequently used channels. These memory locations can be selected individually or can be scanned. (See page 49 under **Memory Location Scan**.)

To enter **Memory** mode, press **MEM/ESC** button. The display will show the **MEM** icon and the **Memory Channel** bank will be displayed on the matrix.

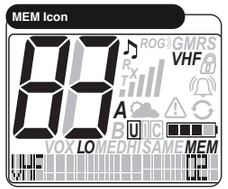
To Program Memory Locations:

1. Press and hold the **MEM/ESC** button for two (2) seconds. The memory location number will be displayed on the matrix and the **MEM** icon will be turned On.
2. Use the **Channel Up/Down** button to advance to the memory location (00-99) you want to program.
3. Press the **MEM/ESC** button to select the memory location.
4. Use the **Band** button to select the GMRS or marine band.
5. Use the **Channel Up/Down** button to change to the channel you want to store into the selected memory location.
6. Press the **MEM/ESC** button to program that channel. The memory location will be displayed on the matrix again.

Repeat steps 2 through 5 to program as many additional memories as you want.

7. Press and hold the **MEM/ESC** button for two (2) seconds. This will return the radio to **Memory** mode.
8. Press and release the **MEM/ESC** button again to return to **Marine or GMRS Standby** mode.

MEM Icon



To Recall a Stored Memory Location:

1. Press the **MEM/ESC** button. The **MEM** icon will be turned On.
2. Press the **Channel Up/Down** button to select the memory location. If a memory location has been programmed, its associated channel will display on the LCD. Your radio is now in **Marine or GMRS Standby** mode on the selected memory location.

To Exit Memory Location Mode:

Press the **MEM/ESC** button to return the radio to **Marine or GMRS Standby** mode. The last channel used in **Marine or GMRS Standby** mode will now be displayed on the LCD and the **MEM** icon will disappear.

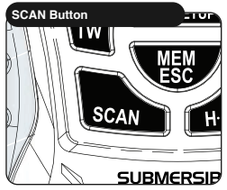
To Erase Stored Memory Locations:

1. Press and hold the **MEM/ESC** button for two (2) seconds. The memory location number will be displayed on the matrix and the **MEM** icon will be turned On.
2. Use the **Channel Up/Down** button to advance to the memory location you want to erase.
3. Press the **MEM/ESC** button to select the memory location.
4. Use the **Channel Up/Down** button to change to the channel to read “00” at the selected memory location.
5. Press the **MEM/ESC** button to erase that channel.

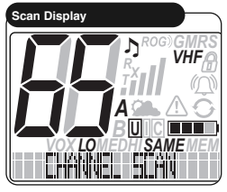
Repeat steps 2 through 5 to erase as many additional memories as you want.

6. Press and hold the **MEM/ESC** button for two (2) seconds. This will return the radio to **Memory** mode.
7. Press and release the **MEM/ESC** button again to return to **Marine or GMRS Standby** mode.

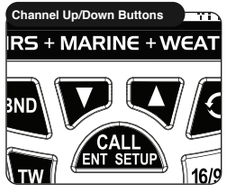
SCAN Button



Scan Display



Channel Up/Down Buttons



Scan Modes

A signal on any channel will stop the scan for 10 seconds to allow you to listen to the traffic on that location. After 10 seconds, the radio will resume scanning.
Press the **Channel Up/Down** button to resume scanning before the 10-second pause has completed or to change the scan direction.

VHF Channel Scan

During **Channel Scan** mode, the radio will rapidly switch from channel to channel through all the channels.

NOTE
The radio must be squelched for **Channel Scan** mode to function. See page 28 for **Squelch** procedure.

To Enter Marine Scan:

1. From **Marine or GMRS Standby** mode, press the **SCAN** button. The radio will immediately begin to scan the entire channel map selected in the active channel map.
   CHANNEL SCAN will display on the matrix.

NOTE
If **Priority 16** feature has been selected, channel 16 will checked frequently for activity to insure you will not miss any calls.

2. To EXIT **Channel Scan** mode, press the **SCAN** or **PTT** button again. The **SCAN** icon will disappear from the LCD and the radio will return to **Marine or GMRS Standby** mode.

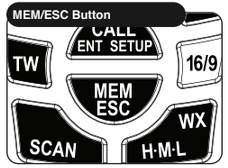
Memory Location Scan

During **Memory Location Scan** mode, the radio will rapidly scan through all pre-assigned memory channels.

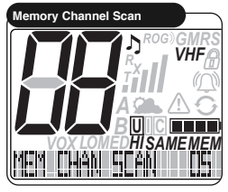
NOTE
The radio must be squelched for **Memory Location Scan** mode to function. See page 18 for **Squelch** procedure.

NOTE
If there are fewer than two (2) memory locations programmed in the radio, the **Memory Location Scan** option will not be available. To program at least two (2) memory locations, see page 34.

MEM/ESC Button



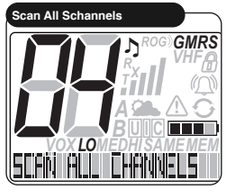
Memory Channel Scan



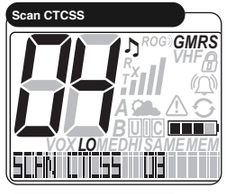
To Enter Memory Location Scan:

1. From **Marine or GMRS Standby** mode, press the **MEM/ESC** button.
2. Press the **SCAN** button. The radio will immediately begin to scan all pre-assigned memory channels. The **MEM** icon will show on the LCD, and **MEM CHAN SCAN** will display on the matrix along with the memory location.
3. To EXIT **Memory Location Scan** mode, press the **SCAN or PTT** button again. The **MEM** icon will disappear from the LCD and the radio will return to **Marine or GMRS Standby** mode.

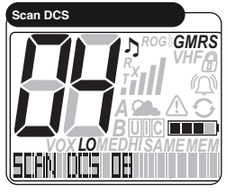
Scan All Schannels



Scan CTCSS



Scan DCS



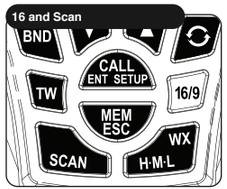
GMRS Scan

In **GMRS** mode, there are 3 types of scans - **all GMRS channels, CTCSS tones** (on the selected channel) **and DCS codes** (on the selected channel).

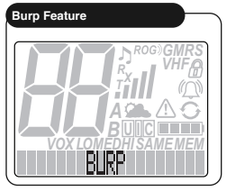
To Enter the GMRS Scans:

1. Successive press and release of the **SCAN** button will toggle betwen all channel scan, CTCSS tone scan and DCS code scan.
2. Press and hold the **SCAN** button to start the selected scan.
3. To exit a GMRS scan, press the **MEM/ESC** button or **PTT**.

16 and Scan



Burp Feature



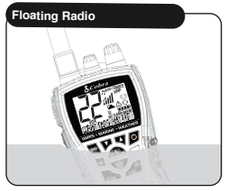
Burp Feature

Cobra's **Burp** feature allows the operator to expel water from inside the speaker grill. This is especially useful if the radio is dropped overboard or during extreme foul weather conditions. In these conditions, water can become trapped in the speaker grill and muffle the audio.

To Activate Burp:

1. Press and release the **16/9** and **SCAN** keys at the same time.
2. The **Burp** tone(s) at maximum level will sound from the internal speaker for eight seconds.
3. During this time, the matrix will display **BURP**.
4. Hold the radio with the speaker grill down to help the water drain out.
5. After an 8-second interval, the radio will return to standby.

Floating Radio



Floating Radio

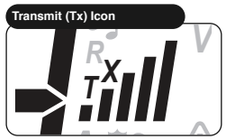
This radio is designed to float if dropped overboard. The orange center makes it visible and easy to retrieve. This rugged radio is also designed to meet JIS7 (IPX7) specifications. This means it's designed to operate properly after being submerged in one meter deep water for 30 minutes.

NOTE

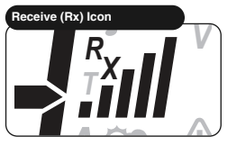
Do not leave the radio floating in water permanently. This could cause premature corrosion of the battery contacts and other damage.

The radio is only designed to float with its included Lithium-ion battery. Using other approved batteries might cause the radio to sink. This includes the optional AA battery tray, depending on the weight of the AA batteries used.

Transmit (Tx) Icon



Receive (Rx) Icon



Marine (VHF), GMRS and Weather Standby Band Selections

The BAND button allows you to quickly toggle between the Marine (VHF), GMRS and WX Alert Standby bands.

To Make a Band Selection:

Press **BAND** button to toggle between the **Marine (VHF) Standby**, **GMRS Standby** or **WX Standby.**

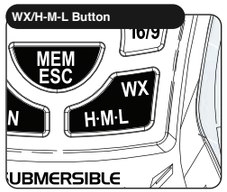
Marine (VHF) Standby Mode

Marine Standby mode is the default mode for the radio whenever it is turned On. From this mode, you can change current settings by becoming familiar with the different key functions. While in **Marine Standby** mode, the user will be able to **Transmit (Tx)** by pressing the **Push to Talk (Talk)** button. Signals in **Receive (Rx)** mode will be received on the selected channel(s).

NOTE

Coast Guard alerts are broadcast on Channel 16 and you need to have the **WX Alert** or **SAME** turned On to receive NOAA weather alerts. While in **Marine Standby** mode, you will receive any messages sent on the channel to which you are tuned.

WX/H-M-L Button



Weather Standby Mode

To enter and exit the **Weather Standby** mode, press and hold the **WX/H-M-L** button or press the **BAND** key.

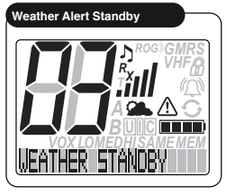
Receiving a Weather Alert

NOAA broadcasts weather information as described in the NOAA weather channels section on page 75 of this manual.

When NOAA broadcasts a weather alert signal and your radio is in **WX Alert Standby** mode, the following items will be displayed on the LCD display:

- The **WX** icon (cloud/sun) icon will be displayed.
- The last used weather channel will be displayed.
- The bar graph will display received signal strength level.
- The **WX Alert** (triangle) or **SAME Alert** icon will be displayed if either of these alerts are enabled.
- The matrix will display **WEATHER STANDBY**.

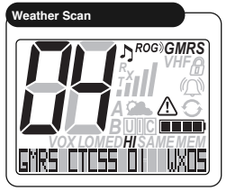
Weather Alert Standby



NOTE
Only one (1) or two (2) of the weather channels will be operating in any given location [only in **Receive (Rx)** mode]. You will need to select the channel with the strongest signal in your location.

NOTE
When **WX Alert** is turned on, and NOAA sends the 1050 Hz alert tone, the radio will sound a series of loud beeps regardless of the volume control setting.

Weather Scan



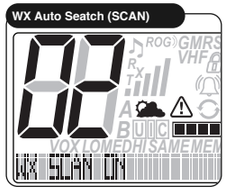
NOTE
When **SAME Alert** is turned on, and NOAA sends a SAME message, the radio will display the NOAA warning message.

NOTE
When either **WX** or **SAME** is set on, then in **Marine** and **GMRS** standby modes, the radio will display the selected weather channel.

WX Auto Search (SCAN) Mode Function

The purpose of the **WX Auto Search (SCAN)** function is to enable the receiver to automatically scan for an active **WX** channel under the following conditions:

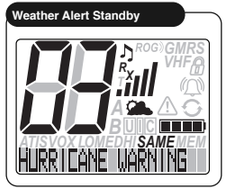
WX Auto Seatch (SCAN)



1. **WX Auto Search (SCAN)** function is On.
2. **WX Alert** is On.
3. The radio is tuned to a **Marine or GMRS** channel and has entered **Power Save** mode (meaning there is no signal activity or user input for 10 seconds).
4. The radio software has detected that the current **WX** channel signal level has dropped below a preset minimum level or is gone completely.

Once these conditions have been met, the software will then scan the **Weather** channels looking for an active **Weather** channel. When an active **Weather** channel is found it will stop the scan and use the new **Weather** channel to look for the standard 1050Hz alert tone.

Weather Alert Standby



SAME Alert Codes

Your HH450 radio has the ability to alert you when NOAA sends out alerts from their Emergency Alert System (EAS). These alerts cover any weather related watches, warnings or statements. Using this system insures that you will always be aware of your local Weather, Civil, and National emergency events.

For a complete list of all the event codes your radio is capable of displaying, please go to the following web address:
http://www.nws.noaa.gov/os/eas_codes.shtml#list

GMRS Standby Mode

The **GMRS** (General Mobile Radio Service) **Standby** feature is a land-mobile service available for short-distance, two-way communications in the USA. You must have a valid FCC license to communicate on these channels (see page XX).

While in **GMRS Standby** mode, the user will be able to **Transmit (Tx)** by pressing the **Push to Talk (Talk)** button. Signals in **Receive (Rx)** mode will be received on the selected channel(s).

When in **GMRS Standby mode**, the radio has the ability to receive calls as well as transmit calls

NOTE

As **GMRS** channels are scrolled, you will see **CTCSS** or **DCS** icons displayed on the LCD screen if the codes have been previously programmed. You will only hear transmissions from other radios with the equivalent subcodes programmed.

When a transmission is received, the following icons will be displayed.

- **Receive (Rx)** Icon
- **Bar Graph** Icon

Transmit (Tx) and Receive (Rx) Modes

Transmit (Tx) and **Receive (Rx)** modes gives you the ability to interact with other **GMRS** radios. When you use this capability, be sure to follow the procedures and to observe the courtesies that govern its use so everyone benefits. (See pages XX through XX) to help you select the proper channels.

When a talk transmission occurs, the following icons will be displayed.

- **Transmit (Tx)** Icon
- **Bar Graph** Icon

To Transmit a Message:

1. Check to see that your radio is set to a proper channel for the type of message you plan to send.
2. Toggle to the **Low Power** setting.
3. With the microphone about 2 in. [51 mm] from your mouth, press and hold the **Talk** button and speak into the microphone. The **Transmit** icon will appear on the LCD.
4. Release the **Talk** button when you are finished speaking. Your radio can only operate in either **Transmit (Tx)** or **Receive (Rx)** mode at any given time. You will not hear the response to your message unless the **Talk** button is released. **Battery Power** icon is held at the level it was at during receive.

NOTE

If the Talk button is held down for five (5) minutes, the radio will automatically sound a series of beeps and cease transmitting to prevent unwanted signal generation and battery drain. As soon as the Talk button is released, it can be pressed again to resume transmission.

Maintenance and Troubleshooting

Maintenance

Very little maintenance is required to keep your Cobra VHF/GMRS radio in good operating condition:

- Keep the radio and charger clean by wiping with a soft cloth and mild detergent. Do not use solvents or harsh or abrasive cleaners, which could damage the case or scratch the LCD screen.
- If the radio is exposed to salt water, wipe with a soft, moist cloth at least once a day to prevent buildup of salt deposits, which could interfere with button operation.
- If the radio will be stored for a long period, such as over the winter, remove the batteries from the battery tray and store them in a separate package. This is especially important if you are using alkaline batteries.

Troubleshooting

Problem	Possible Cause(s)	Solution(s)
No display on LCD when radio is turned On	Batteries are exhausted Batteries not installed properly	Recharge or replace batteries Remove batteries and reinstall according to polarity markings
Batteries run down quickly	Batteries are at the end of their life	Replace with new batteries
Will transmit at one (1) or three (3) watts, but not at six (6) watts	Batteries are low Selected channel is limited to one (1) watt	Recharge or replace batteries Switch to another channel
Will not transmit	Selected channel is limited to receive only	Switch to another channel
No sound from speaker	Volume level is too low or squelch level is too deep	Re-adjust volume and squelch
No response to button press	Button lock is On	Press and hold **Backlight/ Key Lock** button
No answer to calls	Out of range of other station Signal is blocked by terrain	Switch to Medium or High transmit power or move closer.

Specifications

Specifications

General	
Number of Channels	All U.S., Canadian, and International NOAA Weather Channels, 15 GMRS Channels
Channel Spacing	VHF - 25 kHz Max., GMRS - 12.5 kHz
Modulation	VHF - 5 kHz Max., GMRS - 2.5 kHz
Input Voltage	7.4 VDC
Battery Life: 5% TX, 5% RX, 90% Stand-by	Lithium-ion: 8 hrs @ High Power, 14 hrs @ Low Power;
Current Drain: Stand-by Receive Transmit	 45 mA 150 mA 1.8 A @ High power 650 mA @ Low Power
Temperature Range	-20˚C to 50˚C
Radio Dimensions	4.8 in. x 2.4 in. x 1.4 in. (123 mm x 62 mm x 36 mm) not including antenna
Radio Weight	0 lbs 8 oz. (228 g) without batteries
Receiver	
Frequency Range	VHF 156.050 to 163.275 MHz GMRS 462.5500 to 467.7250 MHz
Receiver Type	Marine VHF: Double Conversion Super-Heterodyne GMRS & WX: Low if direct conversion.
Sensitivity (typical):	Marine VHF: 12 dB Sinad: -121 dBm
Adjacent Channel Selectivity	Marine: 70dB, GMRS: 50dB, WX: 55dB (typical)
Intermodulation and Rejection	Marine: 70dB, GMRS: 65dB, WX: 55dB (typical)
Spurious and Image Rejection	Marine: 70dB, GMRS: 50dB, WX: 65dB (typical)
AF Output	400 mW < 5% distortion @ 8 ohms
Transmitter	
Frequency Range: TX	VHF 156.025 to 157.425 MHz GMRS 462.5500 to 462.7250 MHz
RF Output Power	Marine:1, 3 & 6 Watts/GMRS: 1, 2 & 3 Watts
Spurious Emissions	-60 dBc @ High Power, -55 dBc @ Low Power
Microphone Type	Condenser
Frequency Stability	+/-5 ppm
FM Hum and Noise	40 dB

Specifications subject to change without notice.

Warranty and Trademark Acknowledgement

Limited 3-Year Warranty

For Products Purchased In The U.S.A.

Cobra Electronics Corporation warrants that its Cobra VHF/GMRS radio, and the component parts thereof, will be free of defects in workmanship and materials for a period of three (3) years from the date of first consumer purchase. This warranty may be enforced by the first consumer purchaser, provided that the product is utilized within the U.S.A.

Cobra will, without charge, repair or replace, at its option, defective radios, products or component parts upon delivery to the Cobra Factory Service department, accompanied by proof of the date of first consumer purchase, such as a duplicated copy of a sales receipt.

You must pay any initial shipping charges required to ship the product for warranty service, but the return charges will be at Cobra's expense, if the product is repaired or replaced under warranty. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

Exclusions: This limited warranty does not apply:

1. To any product damaged by accident.
2. In the event of misuse or abuse of the product, or as a result of unauthorized alterations or repairs.
3. If the serial number has been altered, defaced, or removed.
4. If the owner of the product resides outside the U.S.A.

All implied warranties, including warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this warranty. Cobra shall not be liable for any incidental, consequential or other damages; including, without limitation, damages resulting from loss of use or cost of installation.

Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

For Products Purchased Outside The U.S.A.

Please contact your local dealer for warranty information.

Trademark Acknowledgement

Cobra®, CobraMarine®, Nothing Comes Close to a Cobra®, and the snake design are registered trademarks of Cobra Electronics Corporation, USA.

Cobra Electronics Corporation™ is a trademark of Cobra Electronics Corporation, USA.

Product Service

Product Service

If you have any questions about operation or installing your new Cobra VHF/GMRS product or if you are missing parts…

Please call Cobra first! DO NOT RETURN THIS PRODUCT TO THE STORE!
See customer assistance on page A1.

If your product should require factory service, please call Cobra first before sending your radio. This will ensure the fastest turn-around time on your repair. You may be asked to send your radio to the Cobra factory. It will be necessary to furnish the following to have the product serviced and returned:

1. For warranty repair, include some form of proof-of-purchase, such as a photocopy of a sales receipt. If you send the original receipt, it cannot be returned.
2. Send the entire product.
3. Enclose a description of what is happening with the radio. Include a typed or clearly printed name and address of where the radio is to be returned.
4. Pack radio securely to prevent damage in transit. If possible, use the original packing material.
5. Ship prepaid and insured by way of a traceable carrier such as United Parcel Service (UPS) or Priority Mail to avoid loss in transit to: Cobra Factory Service, Cobra Electronics Corporation, 6500 West Cortland Street, Chicago, Illinois 60707 U.S.A.
6. If the radio is in warranty, upon receipt of your radio, it will either be repaired or exchanged depending on the model. Please allow approximately three (3) to four (4) weeks before contacting Cobra for status. If the radio is out of warranty, a letter will automatically be sent informing you of the repair charge or replacement charge.
7. If your radio is returned for factory repair, it will be returned to you with default settings restored.

If you have any questions, please call 773-889-3087 for assistance.

FCC Licensing Information

Cobra VHF/GMRS radios comply with the FCC (Federal Communications Commission) requirements that regulate the Maritime Radio Service and General Mobile Radio Service.

The radio operates on all currently allocated marine channels and is switchable for use according to U.S.A., International or Canadian regulations. It features instant access to emergency Channel 16 and calling Channel 9 as well as NOAA (National Oceanic and Atmospheric Administration) All Hazards Radio with Alert.

Station License

An FCC ship station license is no longer required for any vessel traveling in U.S.A. waters which uses a VHF marine radio, RADAR, or EPIRB (Emergency Position Indicating Radio Beacon), and which is not required to carry radio equipment. However, any vessel required to carry a marine radio on an international voyage, carrying an HF single side band radiotelephone, or carrying a marine satellite terminal must obtain a station license.

FCC license forms and applications for ship and land stations can be downloaded through the Internet at www.fcc.gov. Forms can also be obtained by calling the FCC at 888-225-5322.

International Station License

If your vessel will be entering the sovereign waters of a country other than the U.S.A. or Canada, you should contact that country's communications regulatory authority for licensing information.

Radio Call Sign

Currently, the FCC does not require recreational boaters to have a license. The United States Coast Guard recommends that the boat's registration number and state of registry (e.g., IL 1234 AB) be used as a call sign and be clearly visible on the vessel.

Canadian Ship Station License

You need a Radio Operator's Certificate if your vessel is operated in Canadian waters. Radio Operator training and certification is available from the Canadian Power Squadron. Visit their website at http://www.cps-ecp.ca/.

VHF FCC Licensing Information
Licensing

User Responsibility and Operating Locations

All users are responsible for observing domestic and foreign government regulations and are subject to severe penalties for violations. The VHF frequencies on your radio are reserved for marine use and require a special license to operate from land, including when your boat is on its trailer.

NOTE

This device complies with part 15 of the FCC Rules, and Industry Canada license-exempt RSS standards. Operation is subject to the following two (2) 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.

FCC Warnings: Replacement or substitution of transistors, regular diodes or other parts of a unique nature, with parts other than those recommended by Cobra may cause a violation of the technical regulations of part 80 of the FCC Rules, or violation of type acceptance requirements of part 2 of the rules.

GMRS Communication and GMRS FCC Licensing

GMRS Communication

This GMRS (General Mobile Radio Service) feature is a land-mobile service available for short-distance, two-way communications in the USA. You must have a valid FCC license to communicate on these channels.

The GMRS/FRS frequencies that radio this radio uses are set aside for communicating with others while hiking, biking, and working; keeping track of family and friends at a crowded public event; checking with travel companions in another car; talking with neighbors; arranging meeting spots with others while shopping at the mall.

Licensed users will be issued a call sign by the FCC, which should be used for station identification when operating this radio. GMRS users should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of their transmission time.

GMRS FCC Licensing

This two-way radio operates on GMRS (General Mobile Radio Service) frequencies which require an FCC (Federal Communications Commission) license. A user must be licensed prior to transmitting on the GMRS band with this radio. Serious penalties could result for unlicensed use of GMRS channels, in violation of FCC rules. Operation of this radio is subject to additional rules specified in 47 C.F.R. Part 95.

For licensing information and application forms, please call the FCC Hotline at 800-418-FORM. Request form #159 and form #605. Questions regarding the license application should be directed to the FCC at 888-CALL-FCC. Additional information is available on the FCC's website at www.fcc.gov.

NOTE

Even if you operate this radio on FRS (Family Radio Service) channels at low power (1 watt), you are required to have an FCC license. Because this radio operates in the 1 to 5 watt GMRS power range all GMRS rules apply and will require you have a GMRS license even for FRS (Family Radio Service) communication. Normal FRS only radios operate at a maximum power of 1/2 watt (500 milliwatt) power and have an integral (non-detachable) antenna.

GMRS/FRS Frequency Allocation and Compatibility

GMRS/FRS Frequency Allocation and Compatibility

The channel numbers in the GMRS Mode on the MR HH450 DUAL model are designed to "match" the channels on Cobra and other GMRS radios manufactured over the last few years.

Standard GMRS/FRS Channels	MR HH450 DUAL Channels	Service Type	Frequency (MHz)
1	1	GMRS/FRS	462.5625
2	2	GMRS/FRS	462.5875
3	3	GMRS/FRS	462.6125
4	4	GMRS/FRS	462.6375
5	5	GMRS/FRS	462.6625
6	6	GMRS/FRS	462.6875
7	7	GMRS/FRS	462.7125
8	Not Available	FRS	467.5625
9	Not Available	FRS	467.5875
10	Not Available	FRS	467.6125
11	Not Available	FRS	467.6375
12	Not Available	FRS	467.6625
13	Not Available	FRS	467.6875
14	Not Available	FRS	467.7125
15	15	GMRS	462.5500
16	16	GMRS	462.5750
17	17	GMRS	462.6000
18	18	GMRS	462.6250
19	19	GMRS	462.6500
20	20	GMRS	462.6750
21	21	GMRS	462.7000
22	22	GMRS	462.7250

NOTE

Older Cobra GMRS (non dual band) models with only 15 Channels may designate different channel numbers for the same frequency. For example, an older Cobra 15 Channel GMRS model would need to be tuned to Channel 11 in order to communicate with a 22 Channel GMRS tuned to Channel 15. Please use the manual for that product to match a frequency chart/map in this section.

VHF Marine Channel Assignments

Three (3) sets of VHF channels have been established for marine use in the U.S.A., Canada and the rest of the world (International). Most of the channels are the same for all three (3) maps, but there are definite differences (see table on the following pages). Your radio has all three (3) maps built into it and will operate correctly in whichever area you choose.

The following is a brief outline of the channel assignments in the U.S.A. Channel Map.

Channel Assignments (English)

Distress, Safety, and Calling

Channel 16
Getting the attention of another station (calling) or in emergencies (distress and safety).

Calling

Channel 9
General-purpose (non-emergency) calling by non-commercial vessels. Recreational boaters are urged to use this channel to reduce congestion on Channel 16

Intership Safety

Channel 6
Ship-to-ship safety messages and for search and rescue messages to Coast Guard ships and aircraft.

Coast Guard Liaison

Channel 22A
To talk to the Coast Guard, Canadian Coast Guard (non-emergency) after making contact on Channel 16.

Non-Commercial

Channels 67*, 68*, 69, 71, 72, 78A, 79A*, 80A*
Working channels for small vessels. Messages must be about needs of the vessel, such as fishing reports, berthing and rendezvous. Use Channel 72 only for ship-to-ship messages.

Commercial

Channels 1A, 7A, 8, 9, 10, 11, 18A, 19A, 63A, 67, 72, 79A, 80A, 88A*
Working channels for working ships only. Messages must be about business or needs of the ship. Use Channels 8, 67, 72 and 88A only for ship-to-ship messages.

Appendix
VHF Marine
Channel Assignments

Asignación de canales de VHF para radiocomunicación marítima

Existen tres (3) juegos de canales VHF para uso marítimo en los EE.UU., Canadá y el resto del mundo (internacional). La mayoría de los canales coinciden en los tres (3) mapas, pero sin duda existen diferencias (consulte las tablas en las páginas siguientes). El radio incorpora los tres (3) mapas y funcionará correctamente en cualquiera de las tres áreas.

A continuación presentamos en forma resumida las asignaciones de canales del Mapa de canales para EE.UU.

Asignaciones de canales (Español)

Auxilio, seguridad y llamadas

Canal 16
Para ser oídos por otra estación (llamadas) o en casos de emergencia (auxilio y seguridad).

Llamadas

Canal 9
Llamadas de carácter general (excepto casos de emergencia) para embarcaciones no comerciales. Se le pide encarecidamente a la tripulación de las embarcaciones recreativas usar este canal para reducir la congestión del canal 16.

Seguridad entre embarcaciones

Canal 6
Para mensajes de seguridad entre embarcaciones y para mensajes de búsqueda y rescate enviados a barcos y aviones de la guardia costera.

Enlace con la guardia costera

Canal 22A
Para hablar con las guardias costeras estadounidenses y canadienses (excepto casos de emergencia) tras haber establecido contacto por el canal 16.

No comerciales

Canales 67*, 68*, 69, 71, 72, 78A, 79A*, 80A*
Canales activos para pequeñas embarcaciones. Los mensajes deberán estar relacionados con necesidades de las embarcaciones, como por ejemplo, informes de pesca, atraques y agrupamientos. Use el canal 72 solamente para mensajes entre embarcaciones.

Comerciales

Canales 1A, 7A, 8, 9, 10, 11, 18A, 19A, 63A, 67, 72, 79A, 80A, 88A*
Canales activos para embarcaciones activas solamente. Los mensajes deberán estar relacionados con la actividad comercial o las necesidades de la embarcación. Use los canales 8, 67, 72 y 88A solamente para mensajes entre embarcaciones.

Channel Assignments (English)

Sea Tow ARC (Automated Radio Check)

Channels 24, 25, 26, 27, 28

Tune your radio to the proper channel for your community. Conduct a radio check as you normally would. Upon releasing the mic, the system will replay your transmission, letting you hear how you sound.

Public Correspondence (Marine Operator)

Channels 84, 85, 86, 87, 87A, 88*

For calls to marine operators at public coast stations. You can make and receive telephone calls through these stations.

Port Operations

Channels 1A*, 5A*, 12*, 14*, 20A, 63A*, 65A, 66A, 73, 74, 75, 76, 77*

Used for directing the movement of ships in or near ports, locks or waterways. Messages must be about operational handling, movement and safety of ships.

Navigational

Channels 13, 67

Channels are available to all vessels. Messages must be about navigation, including passing or meeting other vessels. These are also the main working channels for most locks and drawbridges. You must keep your messages short and power output at no more than 1 watt.

Maritime Control

Channel 17

For talking to vessels and coast stations operated by state or local governments. Messages must be about regulation and control, boating activities, or assistance.

Digital Selective Calling

Channel 70

This channel is set aside for distress, safety and general calling using only digital selective calling techniques. Voice communication is prohibited; your radio cannot transmit voice messages on this channel.

Weather

Channels Wx 1 Thru 10

Receive-only channels for NOAA and Canadian weather broadcasts. You cannot transmit on these channels.

NOTE

* These channels are restricted to the listed uses in certain parts of the country or for certain types of users only. Consult FCC rules or a knowledgeable radio operator before using them.

Appendix
VHF Marine
Channel Assignments

Asignaciones de canales (Español)

Remolque Marino CAR (Chequeo Automatizado de la Radio)

Canales 24, 25, 26, 27, 28

Sintonice su radio en el canal apropiado para su comunidad. Realice un chequeo de la radio como lo hace normalmente. Al soltar el micrófono, el sistema repetirá su transmisión, dejá oír como suena.

Correspondencia pública (operador marítimo)

Canales 84, 85, 86, 87, 87A, 88*

Para llamadas a operadores marítimos en estaciones costeras públicas. Usted puede realizar y recibir llamadas telefónicas a través de estas estaciones.

Operaciones portuarias

Canales 1A*, 5A*, 12*, 14*, 20A, 63A*, 65A, 66A, 73, 74, 75, 76, 77*

Usados para dirigir el movimiento de las embarcaciones dentro de áreas portuarias, esclusas o canales. Los mensajes deberán estar relacionados con maniobras operacionales, movimientos y seguridad de las embarcaciones.

Navegación

Canales 13, 67

Estos canales están disponibles para todas las embarcaciones. Los mensajes deberán estar relacionados con la navegación, incluidas las maniobras para pasar o alcanzar otras embarcaciones. Éstos también son los principales canales activos para la mayoría de las esclusas y puentes levadizos. Usted deberá transmitir mensajes cortos y mantener la potencia de salida en un vatio como máximo.

Control marítimo

Canal 17

Para comunicarse con embarcaciones y estaciones costeras operadas por entidades gubernamentales locales o estatales. Los mensajes deberán estar relacionados con regulación y control, asistencia o actividades de navegación.

Llamadas selectivas digitales

Canal 70

Este canal está reservado para solicitudes de auxilio, seguridad y llamadas de carácter general que usen solamente técnicas de llamadas selectivas digitales. Las comunicaciones verbales están prohibidas; el radio no puede transmitir mensajes de voz por este canal.

Meteorología

Canales Wx 1 a 10

Canales de recepción únicamente para difusión de información meteorológica NOAA y canadiense. Usted no puede transmitir por estos canales.

NOTA

* El uso de estos canales está dedicado a las aplicaciones que aparecen en la lista, en ciertas partes del país o para ciertos tipos de usuario solamente. Consulte las normas de la FCC o a un operador de radio con experiencia antes de usarlos.

VHF Marine Channel Assignments

Channel Number Número de canal	Channel Map Mapa de canales USA EE.UU.	Int'l Internac	Canada Canadá	Frequency Frecuencia Transmit Transm.	Receive Recepción	Power Limits Límites de potencia
01		•	•	156.050	160.650	
01A	•			156.050	156.050	
02		•	•	156.100	160.700	
03		•	•	156.150	160.750	
04		•		156.200	160.800	
04A			•	156.200	156.200	
05		•		156.250	160.850	
05A	•		•	156.250	156.250	
06	•	•	•	156.300	156.300	
07		•		156.350	160.950	
07A	•		•	156.350	156.350	
08	•	•	•	156.400	156.400	
09	•	•	•	156.450	156.450	
10	•	•	•	156.500	156.500	
11	•	•	•	156.550	156.550	
12	•	•	•	156.600	156.600	
13	•	•	•	156.650	156.650	1 watt USA 1 vatio EE.UU.

Appendix

VHF Marine Channel Assignments

Channel Use (English)	Uso de canales (Español)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Port Operations and Commercial, VTS in selected areas	Operaciones portuarias y comerciales; VTS en áreas selectas
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo) operaciones portuarias,movimiento de embarcaciones
West Coast (Coast Guard Only); East Coast (Commercial Fishing)	**Costa occidental (guardia costera solamente);** Costa oriental (pesca comercial)
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo) operaciones portuarias,movimiento de embarcaciones
Port Operations, VTS in selected areas	Operaciones portuarias; VTS en áreas selectas
Intership Safety	Seguridad entre embarcaciones
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo) operaciones portuarias,movimiento de embarcaciones
Commercial	Comerciales
Commercial (Intership Only)	Comercial (entre embarcaciones solamente)
Boater Calling Channel, Non-Commercial (Recreational)	Canal de llamada de la tripulación, no comercial (recreativo)
Commercial	Comerciales
Commercial, VTS in selected areas	Comercial; VTS en áreas selectas
Port Operations, VTS in selected areas	Operaciones portuarias; VTS en áreas selectas
Intership Navigation Safety (Bridge-to-Bridge). In U.S. waters, large vessels maintain a listening watch on this channel.	Seguridad marítima entre embarcaciones (de puente de mando a puente de mando). En aguas estadounidenses, las grandes embarcaciones se mantienen vigilantes con sus radios sintonizados en este canal

VHF Marine Channel Assignments

Channel Number Número de canal	Channel Map Mapa de canales USA EE.UU.	Int'l Internac	Canada Canadá	Frequency Frecuencia Transmit Transm.	Receive Recepción	Power Limits Límites de potencia
14	•	•	•	156.700	156.700	
15	•			Rx Only	156.750	
15		•	•	156.750	156.750	1 watt CAN 1 vatio Canadá
16	•	•	•	156.800	156.800	
17	•	•	•	156.850	156.850	1 watt CAN 1 vatio Canadá
18		•		156.900	161.500	
18A	•		•	156.900	156.900	
19		•		156.950	161.550	
19A	•		•	156.950	156.950	
20	•	•	•	157.000	161.600	1 watt CAN 1 vatio Canadá
20A	•			157.000	157.000	
21		•		157.050	161.650	
21A	•		•	157.050	157.050	
21B			•	RX only	161.650	
22		•		157.100	161.700	
22A	•		•	157.100	157.100	
23		•	•	157.150	161.750	
23A	•			157.150	157.150	
23B			•	Rx Only	161.750	

Appendix

VHF Marine Channel Assignments

Channel Use (English)	Uso de canales (Español)
Port Operations, VTS in selected areas	Operaciones portuarias; VTS en áreas selectas
Environmental (Receive Only). Used by Class C EPIRBs.	Medioambiental (recepción solamente). Usado por radiobalizas de localización de siniestros (EPIRB) clase C
Canada (EPIRB Buoys Only); International (On-Board Communication)	Canadá (boyas de EPIRB solamente); Internacional (comunicación de a bordo)
International Distress, Safety and Calling	**Llamadas, seguridad y solicitud de auxilio internacional**
State Controlled (U.S.A. Only)	Controlado a nivel estatal (EE.UU. solamente)
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
Commercial	Comerciales
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
Commercial	Comerciales
Canada (Coast Guard Only); International (Port Operations, Ship Movement)	**Canadá (guardia costera solamente);** Internacional (operaciones portuarias, movimiento de embarcaciones)
Port Operations	Operaciones portuarias
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
U.S. (Government Only); Canada (Coast Guard Only)	**EE.UU. (entidades gubernamentales solamente); Canadá (guardia costera solamente)**
Coast Guard Only – Weather Broadcasts	**Solamente Guardacostas –** Transmisiones Meteorológicas
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
U.S. and Canadian Coast Guard Liaison and Maritime Safety Information Broadcasts that are announced on Channel 16	Enlace entre las guardias costeras estadounidenses y canadienses, y difusión de información sobre seguridad marítima anunciada por el canal 16
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Coast Guard Only	**Solamente Guardacostas**
Coast Guard Only – Weather Broadcasts	**Solamente Guardacostas –** Transmisiones Meteorológicas

VHF Marine Channel Assignments

Channel Number Número de canal	Channel Map Mapa de canales USA EE.UU.	Int'l Internac	Canada Canadá	Frequency Frecuencia Transmit Transm.	Receive Recepción	Power Limits Límites de potencia
24	•	•	•	157.200	161.800	
25	•	•	•	157.250	161.850	
25B			•	RX only	161.850	
26	•	•	•	157.300	161.900	
27	•	•	•	157.350	161.950	
28	•	•	•	157.400	162.000	
28B			•	RX only	162.000	
60		•	•	156.025	160.625	
61		•		156.075	160.675	
61A			•	156.075	156.075	
62		•		156.125	160.725	
62A			•	156.125	156.125	
63		•		156.175	160.775	
63A	•		•	156.175	156.175	
64		•	•	156.225	160.825	
64A			•	156.225	156.225	
65		•		156.275	160.875	
65A	•		•	156.275	156.275	
66		•		156.325	160.925	

Appendix

VHF Marine Channel Assignments

Channel Use (English)	Uso de canales (Español)
Sea Tow ARC (Automated Radio Check)	RMCAR (Chequeo Automatizado de la Radio)
Sea Tow ARC (Automated Radio Check)	RMCAR (Chequeo Automatizado de la Radio)
Safety: Continuous Marine Broadcast (CMB) service by MCTS Canada	**Seguridad: Transmisión Marítima Continua (CMB) servicio por MCTS Canadá**
Sea Tow ARC (Automated Radio Check)	RMCAR (Chequeo Automatizado de la Radio)
Sea Tow ARC (Automated Radio Check)	RMCAR (Chequeo Automatizado de la Radio)
Sea Tow ARC (Automated Radio Check)	RMCAR (Chequeo Automatizado de la Radio)
Safety: Continuous Marine Broadcast (CMB) service by MCTS Canada	**Seguridad: Transmisión Marítima Continua (CMB) servicio por MCTS Canadá**
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator) Port Operation, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
Canada (Coast Guard Only); **West Coast (Coast Guard Only);** East Coast (Commercial Fishing)	**Canadá (guardia costera solamente); Costa occidental (guardia costera solamente);** Costa oriental (pesca comercial)
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
West Coast (Coast Guard Only); East Coast (Commercial Fishing)	**Costa occidental (guardia costera solamente);** Costa oriental (pesca comercial)
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
Port Operations and Commercial, VTS in selected areas, Canada Tow Boats-BCC	Operaciones portuarias y comerciales; VTS en áreas selectas, Barcos-BCC de la remolque de Canadá
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
U.S. (Government Only); Canada (Commercial Fishing)	**EE.UU. (entidades gubernamentales solamente);** Canadá (pesca comercial)
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
Port Operations	Operaciones portuarias
Public Correspondence (Marine Operator), Port Operations, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones

VHF Marine Channel Assignments

Channel Number Número de canal	Channel Map Mapa de canales			Frequency Frecuencia		Power Limits Límites de potencia
	USA EE.UU.	Int'l Internac	Canada Canadá	Transmit Transm.	Receive Recepción	
66A	•		•	156.325	156.325	
67	•	•	•	156.375	156.375	
68	•	•	•	156.425	156.425	
69	•	•	•	156.475	156.475	
70	•	•	•	RX only	156.525	
71	•	•	•	156.575	156.575	1 watt USA
72	•	•	•	156.625	156.625	
73	•	•	•	156.675	156.675	
74	•	•	•	156.725	156.725	
75	•	•	•	156.775	156.775	1 watt
76	•	•		156.825	156.825	1 watt
77	•	•	•	156.875	156.875	1 watt USA 1 vatio EE.UU

Appendix

VHF Marine Channel Assignments

Channel Use (English)	Uso de canales (Español)
Port Operations	Operaciones portuarias
U.S. (Commercial). Used for bridge-to-bridge communications in lower Mississippi River (Intership Only); Canada (Commercial Fishing), S&R	EE.UU. (comercial). Usado para comunicaciones de puente de mando a puente de mando en la parte baja del Río Misisipí (entre embarcaciones solamente); Canadá (pesca comercial) (transmisión y recepción)
Non-Commercial (Recreational)	No comercial (recreativo)
U.S. (Non-Commercial, Recreational); Canada (Commercial Fishing Only); International (Intership, Port Operations, Ship Movement)	EE.UU. (no comercial, recreativo); Canadá (pesca comercial solamente); Internacional (comunicaciones entre embarcaciones, operaciones portuarias, movimiento de embarcaciones)
Digital Selective Calling (Voice communications not allowed)	**Llamadas selectivas digitales (las comunicaciones verbales están prohibidas)**
U.S. and Canada (Non-Commercial, Recreational); International (Port Operations, Ship Movement)	EE.UU. y Canadá (no comercial, recreativo); Internacional (operaciones portuarias, movimiento de embarcaciones)
Non-Commercial (Intership Only)	No comercial (entre embarcaciones solamente)
U.S. (Port Operations); Canada (Commercial Fishing Only); International (Intership, Port Operations, Ship Movement)	EE.UU. (operaciones portuarias); Canadá (pesca comercial solamente); Internacional (comunicaciones entre embarcaciones, operaciones portuarias, movimiento de embarcaciones)
U.S. (Port Operations); Canada (Commercial Fishing Only); International (Intership, Port Operations, Ship Movement)	EE.UU. (operaciones portuarias); Canadá (pesca comercial solamente); Internacional (comunicaciones entre embarcaciones, operaciones portuarias, movimiento de embarcaciones)
Port Operations (Intership Only)	Operaciones portuarias (entre embarcaciones solamente)
Port Operations (Intership Only)	Operaciones portuarias (entre embarcaciones solamente)
Port Operations (Intership only). Restricted to communications with pilots for movement and docking of ships.	Operaciones portuarias (entre embarcaciones solamente). Restringido a comunicaciones con pilotos para el movimiento y atraque de embarcaciones.

VHF Marine Channel Assignments

Channel Number Número de canal	Channel Map Mapa de canales USA EE.UU.	Int'l Internac	Canada Canadá	Frequency Frecuencia Transmit Transm.	Receive Recepción	Power Limits Límites de potencia
78		•		156.925	161.525	
78A	•		•	156.925	156.925	
79		•		156.975	161.575	
79A	•		•	156.975	156.975	
80		•		157.025	161.625	
80A	•		•	157.025	157.025	
81		•		157.075	161.675	
81A	•		•	157.075	157.075	
82		•		157.125	161.725	
82A	•		•	157.125	157.125	
83		•		157.175	161.775	
83A			•	157.175	157.175	
83B			•	RX only	161.775	
84	•	•	•	157.225	161.825	
85	•	•	•	157.275	161.875	
86	•	•	•	157.325	161.925	
87	•	•	•	157.375	157.375	
88	•	•	•	157.425	157.425	
88A	•			157.425	157.425	

Appendix

VHF Marine Channel Assignments

Channel Use (English)	Uso de canales (Español)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Non-Commercial (Recreational)	No comercial (recreativo)
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
Commercial (Also Non-Commercial only in Great Lakes)	Comercial (en los Grandes Lagos también no comercial)
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
Commercial (Also Non-Commercial only in Great Lakes)	Comercial (en los Grandes Lagos también no comercial)
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
U.S. (Government Only; Environmental Protection Operations)	**EE.UU. (entidades gubernamentales solamente; operaciones de protección medioambiental)**
Public Correspondence (Marine Operator), Port Operation, Ship Movement	Correspondencia pública (operador marítimo), operaciones portuarias, movimiento de embarcaciones
U.S. (Government Only); Canada (Coast Guard Only)	**EE.UU. (entidades gubernamentales solamente); Canadá (guardia costera solamente)**
Port Operations, Ship Movement	Operaciones portuarias, movimiento de embarcaciones
(Coast Guard Only) (Coast Guard Only)	**Canadá (guardia costera solamente) Canadá (guardia costera solamente)**
Coast Guard Only – Weather Broadcasts	**Solamente Guardacostas –** Transmisiones Meteorológicas
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Marine Operator)	Correspondencia pública (operador marítimo)
Public Correspondence (Ship to Coast). In U.S. only within 75 miles of Canadian Border.	Correspondencia pública (entre embarcación y costa). En los EE.UU., solamente dentro de los casi 121 kilómetros (75 millas) de la frontera canadiense
Commercial Intership only	Comercial entre embarcaciones solamente

VHF Marine Channel Assignments (English)

NOTE
Many of the plain-numbered channels, such as 01, 02 and 03, transmit and receive on different frequencies. This is termed duplex operation. The rest of the plain-numbered channels and all of the A channels, such as 01A, 03A and 04A, transmit and receive on a single frequency, which is termed simplex operation. Your radio automatically adjusts to these conditions. When in simplex operation, the A icon will appear on the LCD (see illustration on page A3).

NOTE
All channels are preprogrammed at the factory according to international regulations and those of the FCC (U.S.A.) and Industry Canada (Canada). They cannot be altered by the user nor can modes of operation be changed between simplex and duplex.

Asignación de canales de VHF para radiocomunicación marítima (Español)

NOTA
Muchos de los canales de números simples, como 01, 02 y 03, transmiten y reciben en diferentes frecuencias. A esto se le llama operación dúplex. El resto de los canales de números simples y todos los canales A, como 01A, 03A y 04A, transmiten y reciben en una sola frecuencia, a la que se le llama operación simple (simplex). Su radio se ajusta automáticamente a estas condiciones. Cuando esté en operación simple, el icono A aparecerá en la pantalla de cristal líquido (vea la ilustración de la página A3).

NOTA
Todos los canales vienen programados previamente de fábrica conforme a los reglamentos internacionales y a los de la FCC (EE. UU) e Industry Canada (Canadá). No pueden ser alterados por el usuario, así como tampoco pueden cambiarse los modos de operación entre simple y dúplex.

Weather Channel Assignments
Asignaciones de canales meteorológicos

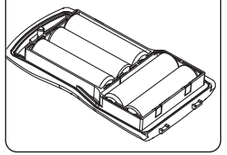
Channel Number Número de canal	RX Frequency MHz Frecuencia de recepción (MHz)	Weather Channel Weather Channel
1	162.550	NOAA
2	162.400	NOAA
3	162.475	NOAA
4	162.425	NOAA
5	162.450	NOAA
6	162.500	NOAA
7	162.525	NOAA
8	161.650	Canada
9	161.775	Canada
10	163.275	NOAA

Optional Accessories

Accessories

Your Cobra radio has several optional accessories available to enhance the use of the radio. Some are listed below:

Alkaline Battery Tray



Alkaline Battery Tray

A special alkaline battery tray (P/N CM 110-024) is available as an optional accessory to have as an emergency backup. By using five (5) high-quality AA alkaline batteries, you can have a spare battery backup source for your radio.

NOTE
Alkaline batteries are not rechargeable.

Lapel Speaker/Microphone

Lapel Speaker/Microphone

A speaker/microphone that attaches to your lapel, by ordering P/N CM 330-001.

This unique accessory allows you to wear the radio on your belt while still being able to communicate with other vessels. A small Push to Talk (PTT) button on the lapel speaker/microphone allows you to answer any incoming call.

LiON Battery Pack

LiON Battery

LiON replacement battery (P/N CM 110-026). Can be used with the charger included with this radio.

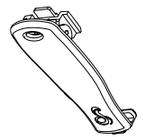
Antenna

Antenna

Replacement Antenna P/N CM 300-003

Optional Accessories

Belt Clip



Belt Clip

Replacement Belt Clip P/N CM 240-003

AC Charger

AC Charger

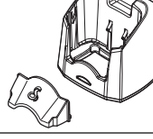
Replacement AC Charger P/N CM 120-005

DC Charger

DC Charger

Replacement DC Charger P/N CM 130-005

Drop-In Battery Charger



Drop-In Battery Charger

Replacement Drop-In Charger P/N CM 110-030

Notes

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