

GPSCOM 170

OWNER'S
MANUAL &
REFERENCE



 **GARMIN®**

Software Version 2.02 or above

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April 1997 Part #190-00093-00 Rev. D Printed in USA.



IMPORTANT!

The Telecommunications Act of 1996, effective February 8, 1996, provides the FCC discretion to eliminate radio station license requirements for aircraft and ships. At the present time, you do not need an individual license to operate the GPSCOM 170 aboard your private vessel in many circumstances. To find out the specific details on whether you are exempt from licensing, please see FCC Fact Sheet PR 5000 or contact the FCC at 1-800-322-1117.

Note that no license is required for a portable radio used only as a backup on a vessel which already has a station license per FCC 506 Instructions dated 1993.

If a marine license is required or desired, contact the FCC at 1-800-322-1117 to request form 506, Application for Ship Radio Station License.

The FCC also has a fax-on-demand service to provide forms by fax at 1-202-418-0177.

The GPSCOM 170 owner accepts all responsibility for obtaining the proper licensing before using the transmitter.

WARNING! This transmitter will operate on channels/frequencies that have restricted use in the United States. The channel assignments include frequencies assigned for exclusive use of the U.S. Coast Guard, use in Canada, and use in International waters. Operation in these frequencies without proper authorization is strictly forbidden. For frequencies/channels that are currently available for use in the U.S. without an individual license, please contact the FCC Call Center at 1-888-CALL-FCC.



GPSCOM 170 OWNER'S MANUAL

Before getting started, check to see that your GARMIN GPSCOM 170 package includes the following items. If you are missing any parts, please contact your dealer immediately.

- GPSCOM 170 Unit
- Flex Whip Com Antenna
- Quick Reference Card
- Owner's Manual
- Trickle Charger/AC Adapter
- Belt Clip
- Carrying Case
- Wrist Strap

*Cautions***CAUTION**

The GPS system is operated by the government of the United States, which is solely responsible for its accuracy and maintenance. The system is subject to changes which could affect the accuracy and performance of all GPS equipment. Although the GPSCOM 170 is a precision electronic NAVigation AID (NAVAID), any NAVAID can be misused or misinterpreted and therefore, become unsafe.

Use the GPSCOM 170 at your own risk. To reduce the risk of unsafe operation, carefully review and understand all aspects of this Owner's Manual and thoroughly practice operation using the simulator mode prior to actual use. When in actual use, carefully compare indications from the GPSCOM 170 to all available navigation sources including the information from other NAVAIDS, visual sightings, charts, etc. For safety, always resolve any discrepancies before continuing navigation.

NOTE: This device meets requirements for Part 15 of the FCC limits for Class B digital devices for home or office use. It has been tested for compliance with all necessary FCC standards. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other equipment, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by relocating the equipment or connecting the equipment to a different circuit than the affected equipment. Consult an authorized dealer or other qualified service technician for additional help if these remedies do not correct the problem. Operation is subject to the following conditions: (1) This device cannot cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The GPSCOM 170 does not contain any user-serviceable parts. Repairs should only be made by an authorized service center. Unauthorized repairs or modifications could void your warranty and your authority to operate this device under Part 15 regulations.

Table Of Contents

SECTION ONE Introduction

Unit Description/Keys and Controls	2-3
Keys and Controls	4-5

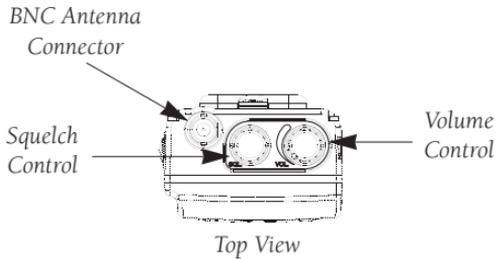
SECTION TWO Getting Started

Acquiring Satellites	6
Navigation Pages	7-13
VHF Transceiver Basics	14-17

SECTION THREE Reference

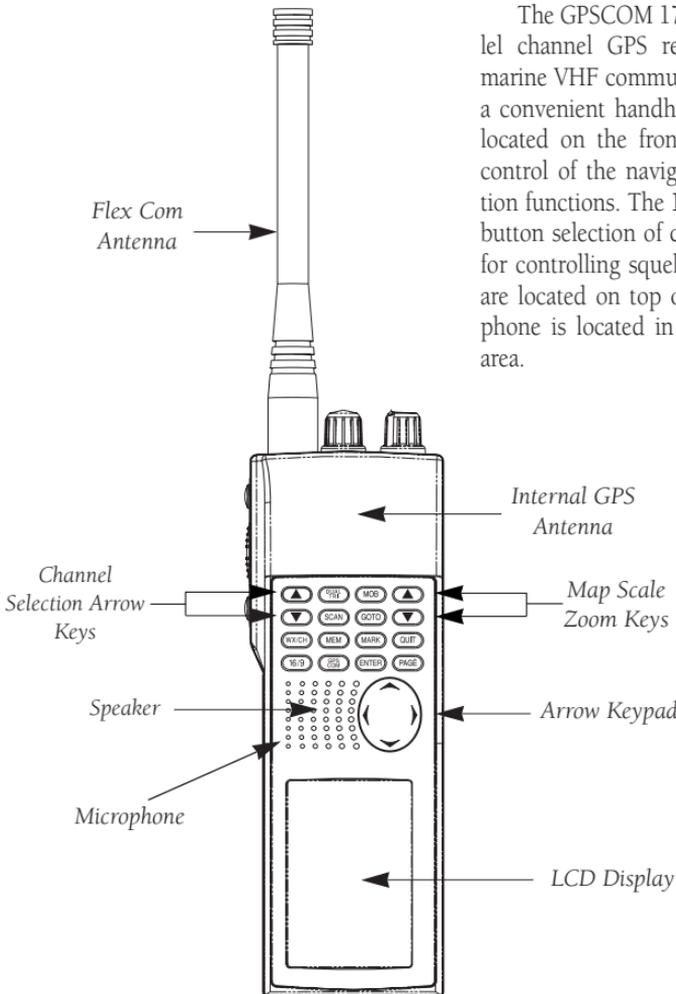
Satellite Status and Position Pages	18-21
Creating, Using, and Editing Waypoints	22-28
Using the VHF Transceiver	29-38
GOTO, MOB, and TracBack Navigation	39-41
Route Navigation	42-47
Navigation Guidance Pages	48-55
Menu Page	56
System Setup	57-63
Appendix A—Initializing the Receiver	64-66
Appendix B—Accessories and Installation	67-69
Appendix C—VHF Channel List	70-71
Appendix D—Specifications	72-73
Appendix E—Messages	74-75
Appendix F—Map Datums	76-77
Appendix G—Time Offset Chart	78
Appendix H—Index	79-81

**Unit
Description**



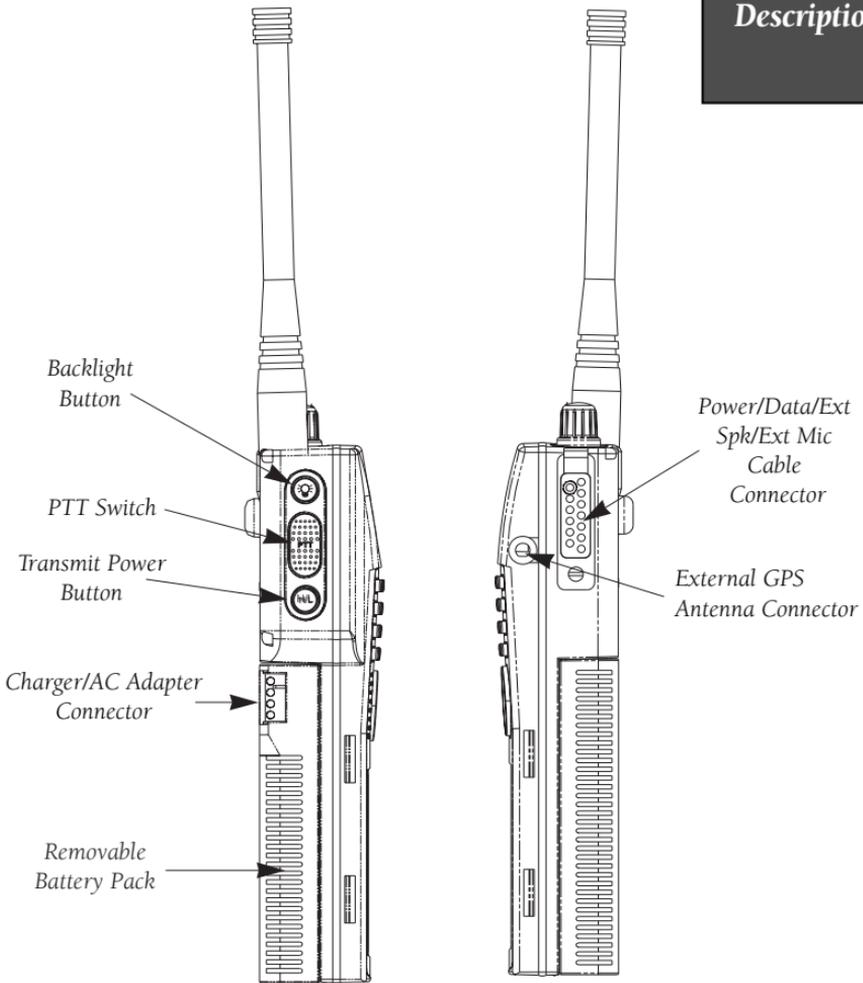
Top View

The GPSCOM 170 combines a 12 parallel channel GPS receiver with a 5 watt marine VHF communications transceiver in a convenient handheld package. A keypad located on the front of the unit provides control of the navigation and communication functions. The **16/9** key allows for one button selection of channel 16 or 9. Knobs for controlling squelch, power and volume are located on top of the unit. The microphone is located in the lower left speaker area.



Front View

Unit Description



Side Views

The backlight button, transmitting power/override button, charger/AC adapter connector, and push-to-talk (PTT) switch are located on the left side of the unit. The connector for the external GPS antenna and power/data/ext speaker/ext mic cable are located on the right side. A removable Ni-Cad battery pack powers the unit and attaches to the back. See Appendix B for instructions on installing and removing the battery pack.

Keys and Controls



Use the two-speed **ARROW KEYPAD** to enter data. Press on a particular arrow key once to scroll through data options slowly. Press and hold down an arrow key for faster scrolling.



Use the **UP** and **DOWN** arrow keys to select alphanumerical characters and menu choices, and to move the field highlight from field to field.



Use the **LEFT** and **RIGHT** arrow keys to move the selected character field, and to move the highlight from field to field. The left arrow key is also used to clear a selected field.



The **MAP SCALE ZOOM** keys select the desired map range from 0.2 to 320 nm.



The **ENTER** key confirms data entry and on-screen responses. This key also activates highlighted fields to allow data entry.



The **MARK** key captures a position and displays the mark position page.



The **GOTO** key displays the GOTO waypoint page, allowing you to select the destination waypoint.



The **PAGE** key scrolls through the main data pages in sequence and returns the display from a submenu page to a main page. It also displays the message screen when a message alert appears.



The **MOB** key performs the man overboard function. This marks the current position, and always displays your current range and bearing from this position.



The **QUIT** key returns you to a previous page, or clears data entry and restores a data field's previous value.

Keys and Controls



The **CHANNEL SELECTION** arrow keys are used to select channels. The channel number can be increased or decreased one with each press, or if held will continue to increase or decrease the number as long as the key is held.



The **GPSCOM** key lets you choose between the main GPS and main communication pages.



The **16/9** key selects channel 16 or 9 for immediate use.



The **DUAL/TRI** key activates dual and tri watch monitoring.



The **WX/CH** key places the unit in weather channel receive mode.



The **SCAN** key puts the unit into the “all scan” or the “memory scan” mode.



The **MEM** key accesses the memory setup page which enables you to program channels into memory.



The **ON/OFF/VOLUME** control turns the unit on and off and adjusts the volume level.



The **SQUELCH** control eliminates receiver background noise and allows only received transmissions to be heard.



The **PUSH-TO-TALK (PTT)** switch activates the GPSCOM 170 transmitter on the active frequency.



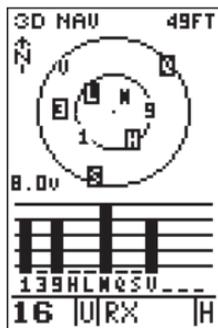
The **BACKLIGHT** button illuminates the arrow keypad and LCD Screen through four levels of backlighting (three levels of brightness and off).



The **TRANSMIT POWER BUTTON** selects one or five watts of transmit power.

Acquiring
Satellites**Important!**

Make sure you charge the Ni-Cad battery pack for 14 hours before using your GPSCOM 170 to ensure optimum capacity and performance. Note: When charging the battery pack, turn the unit off to ensure a full charge. Complete instructions on charging the pack are in Appendix B.



The signal strength bars on the satellite status page give you an indication of what satellites are visible to the receiver, whether or not they're being used to calculate a position fix, and the signal quality.

Getting Started

The GPSCOM 170 is a powerful navigation and communication tool that offers mariners a host of advanced features that help make boating safer and more efficient. The getting started tour is designed to quickly guide you through basic features and functions of the unit. Once you've completed the tour and become familiar with the main pages and features of the unit, refer to the reference section for complete instructions on performing specific tasks and functions.

The getting started tour assumes you have initialized the unit according to the instructions given in Appendix A, and have not changed any of the default settings. If you have changed any settings, the descriptions and pictures used may not match your configuration.

Powering Up**To turn the GPSCOM 170 on:**

1. Turn the VOL control clockwise.

The welcome page will be displayed while the unit conducts a self test. Once testing is complete, the welcome page will be replaced by the satellite status page and the GPSCOM 170 will begin acquiring satellite data.

Satellite Status Page

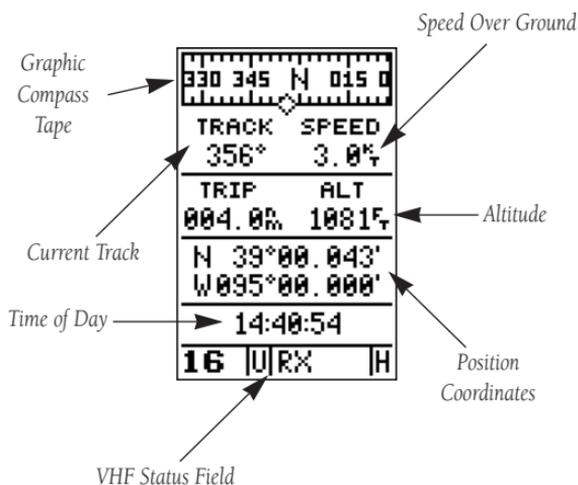
The satellite status page provides a visual reference of satellite acquisition and receiver status, with a signal strength bar graph and a satellite sky view in the center of the page. The accuracy of your position is shown in the upper right hand side of the page.

The satellite sky view and signal strength bars give you an indication of what satellites are visible to the receiver and whether they are being tracked. Satellites, labeled with numbers and letters, are placed on the page indicating their position in the sky.

The signal strength bars show how strong the signal is from each satellite being tracked: The taller the bar, the stronger the signal. For more information on the satellite status page, see page 18.

You'll know you have a fix when a 2D or 3D status appears in the status field or the receiver automatically transitions to the position page. If you encounter difficulty acquiring satellite signals, see Appendix A.

Position Page



The position page shows where you are, what direction you're heading and how fast you're going. The graphic compass at the top of the page indicates the direction you're moving. The four user-selectable data fields below the compass tape show your current course and speed over ground, along with a resettable trip odometer and altitude display. Your current latitude and longitude, along with a 12/24-hour clock, appear at the bottom of the page.

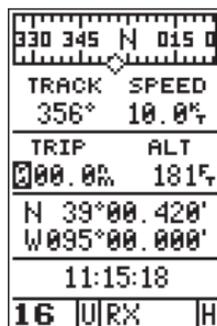
The VHF status field appears at the bottom of every page. It displays (from left to right) the current channel, band of operation, operating mode, and output power level. The VHF status field elements are discussed in detail in the reference section.



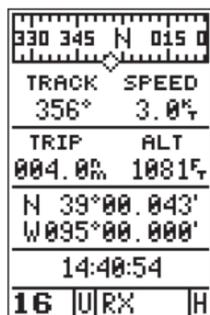
The graphic compass display is designed to show your current track and does not serve as a true magnetic compass while you're standing still.

GETTING
STARTED

Position Page



The position page also features a resettable trip odometer to keep track of your distance traveled.



In addition to displaying your position coordinates, the position page shows your track and speed over the ground.

Marking a
Position

MARK POSITION		
Waypoint:		
001		
N 39°00.000'		
W095°00.000'		
Add to route		
number: --		
		SAVE?
16	U/RX	H

To save a waypoint with the three digit name, simply press ENTER on 'SAVE'.

MARK POSITION		
Waypoint:		
HOH [] _ _		
N 39°00.000'		
W095°00.000'		
Add to route		
number: --		
		SAVE?
16	U/RX	H

The arrow keypad is used for all data entry. Use the UP and DOWN keys to select letters, numbers, or menu options; use the LEFT and RIGHT keys to move the cursor forward or backward along the line.

Marking a Position

Now that you've acquired a position, let's mark it as a waypoint for future reference.

1. Press the **MARK** key to capture and hold your position.



To mark a position, you must have obtained a 2D or 3D fix, or have the receiver in simulator mode. If you try to mark a position without a position fix, you will be alerted with a 'No Position' message.

The mark position page will appear, showing the captured position and a default 3-digit waypoint name, 001. Let's change the name to something more meaningful, like 'HOME'.

1. Use the arrow keypad to move the field highlight from the 'SAVE?' field to the 'Waypoint' field.
2. Press **ENTER** and the left arrow key to clear the default waypoint name.
3. Press and hold the up arrow key to scroll through the alphabet until the letter 'H' appears.
4. Press the right arrow key once to move the character highlight to the next character space.
5. Repeat steps 3 and 4 until the word 'HOME' is displayed.
6. Press **ENTER** to complete entry of the name.
7. Press the down arrow key once to return the field highlight to the 'SAVE' field.
8. Press **ENTER** to confirm that you want to save the position as a waypoint named 'HOME'.

The mark position page will now be replaced by the position page (the page displayed prior to pressing MARK). The 'HOME' waypoint is now stored in the GPSCOM 170's memory, and will remain there until you manually remove it or clear the receiver's memory. For more on waypoint management, see pages 22-28.

Position and
Map Pages

Using the Position and Map Pages

Now that you've marked a position, it's time to take a brisk walk using the position and moving map pages to watch your every move. You will need to walk for at least the time stated in the below steps to get a much better indication of how the GPSCOM 170's steering guidance and mapping features work.

1. Walk in a straight line for 3-4 minutes at a fast pace and watch the position page. You can time your distance with the on-screen clock.

330 345 N 015 0	
TRACK	SPEED
356°	3.0%
TRIP	ALT
004.0%	1081%
N 39°00.043'	
W 095°00.000'	
14:40:54	
16	U/RX H

The direction you are moving (your track) and your speed are displayed on the upper part of the screen, just below the graphic compass display. The latitude, longitude and approximate altitude of your position—along with a resettable trip odometer—are continuously displayed in the middle of the page, with the time of day displayed below.

Now let's change the display to the moving map page and watch the track log of our walk:

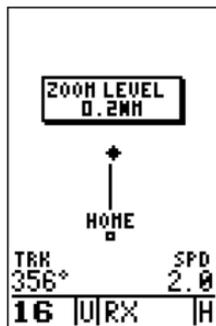
1. Press the **PAGE** key to change from the position page to the map page.

HOME	
TRK	SPD
356°	3.0
16	U/RX H

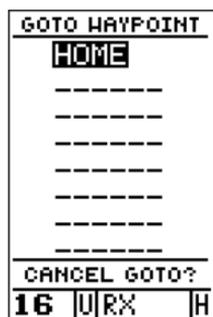
Map Page

The map page displays your present position as a diamond icon and provides a real time graphic 'bread-crumbs' display of your track right on screen.

The moving map's default setting is track up orientation. 'Track up' means that your current direction of travel is always up (or towards the top of) the screen. It can also be set for north up, or desired track up orientation by using the map setup page.

Moving Map
Page

When you want to change the map scale, simply use the up and down arrow zoom keys to select the desired scale.



The GOTO waypoint page allows you to select your destination from a list of all available waypoints in the GPSCOM 170's memory.

Moving Map Pages

The GPSCOM 170's next page, the moving map page, shows your movement as a track log, with your present position shown as a diamond icon in the center of the map. You'll notice the black square below the diamond, which represents the position you just created ('HOME'), and the line between the two, which shows your track.

Nearby waypoints are represented as squares, with the waypoint name listed above the square. When you want to change the map scale, simply use the up and down arrow zoom keys to select the desired scale.

1. Now turn 90° to your right and continue walking at a fast pace for another 2-3 minutes. Notice how the display changes, always keeping the direction you are moving at the top of the map.

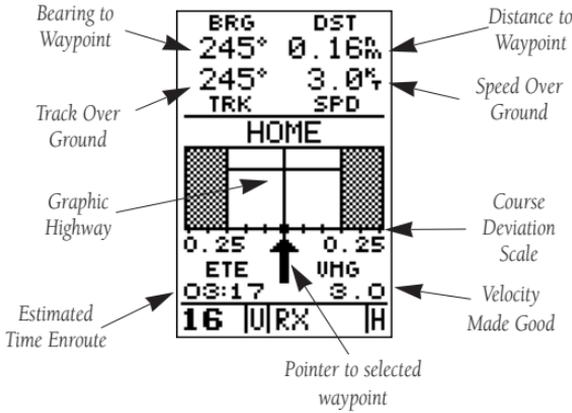
Going To a Waypoint

Once you've stored a waypoint in memory, you can use the GPSCOM 170 to guide you to it by performing a simple GOTO. A GOTO is really nothing more than the receiver drawing a straight-line course from your present position to the destination you've selected. To see how it works, let's try navigating back to our starting position, the HOME waypoint.

To select a GOTO destination:

1. Press **GOTO**.
2. The **GOTO** waypoint page will appear, displaying all the waypoints in memory in alphabetical order.
3. Use the arrow keypad to highlight the 'HOME' waypoint.
4. Press **ENTER** to confirm that you want to navigate to the displayed waypoint.

Using the Highway Page

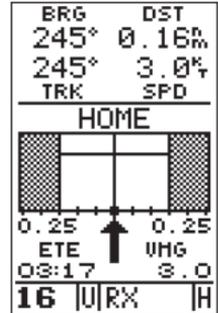


The GPSCOM 170's highway page provides graphic steering guidance to a destination, with an emphasis on a straight-line course to the desired waypoint and the distance and direction you are off course. The bearing and distance to a waypoint, along with your current track and speed, are displayed at the top of the screen, with your estimated time enroute (ETE) and velocity made good (VMG), or the rate you are closing in on your destination, shown at the bottom.

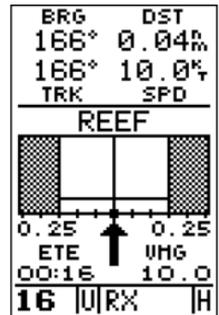
As you head toward your destination, the middle section of the screen provides visual guidance to your waypoint on a moving graphic 'highway'. The moving arrow just below the course deviation scale always points to your selected waypoint relative to the direction you are moving.

Your present position is represented by the diamond in the center of the course deviation scale. The line down the middle of the highway represents your desired track. As you navigate toward a waypoint, the highway will actually move, indicating the direction you're off course, relative to the position square on the CDI scale. To stay on course simply steer toward the center of the highway.

Using The Highway Page

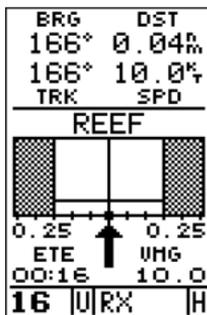


Your present position is represented by the square in the center of the course deviation scale.



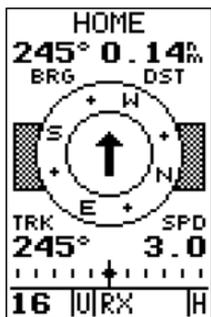
As you approach a waypoint, a horizontal 'finish line' will move toward the bottom of the highway.

Compass & Message Page



Message Page

Once you are one minute from the destination, an arrival message will appear on the message page.



Compass Page

The GPSCOM 170 will also provide steering guidance with a graphic compass.

If you do get off course by more than 1/5th of the selected CDI range, the exact distance you are off course will be displayed where the CDI scale normally appears. As you approach a waypoint, a horizontal 'finish line' will move toward the bottom of the highway. When the finish line reaches the CDI scale, you've arrived at your destination. Whenever the unit has something it needs to tell you, a message indicator will flash on screen. When you are less than one minute from reaching your HOME waypoint, the message box will begin flashing.

1. To view a message, press **PAGE** when the message indicator appears.
2. Press **PAGE** to return to the previous page.

There's also a compass page to help provide better steering guidance where straight-line navigation is not possible.

To select the compass page:

1. While viewing the highway page, press **ENTER** twice.

The compass page will now become the displayed navigation page. This page provides a directional pointer to your destination by using a rotating compass display to show direction of travel. It provides better steering guidance at slower speeds for travel with many directional changes.

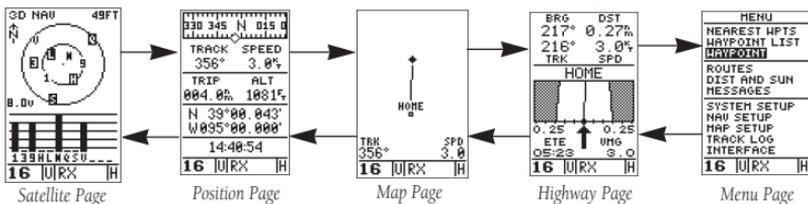
To switch back to the highway page:

1. Press **ENTER** twice.

GPS Page Sequence

Now that you've arrived 'HOME', let's take a minute to see how the GPSCOM 170's main GPS pages work together. The unit features five main pages, which are linked together in a chain. You can quickly scroll through the pages in either direction using the **PAGE** and **QUIT** keys.

1. Press **PAGE** to scroll through the five main pages in sequence.
2. Press **QUIT** to scroll through pages in the opposite direction.



Menu Page

You've already seen the first four pages in action by acquiring satellites, marking a position and navigating to a destination. The last page available from the main GPS page sequence is the menu page, which provides access to the GPSCOM 170's waypoint management, route, track log and setup features. The 11 submenus are divided into categories by function.

To select a submenu from the menu page:

1. Press **PAGE** or **QUIT** until the menu page appears.
2. Use the arrow keypad to highlight the submenu you want to view.
3. Press **ENTER** to access the submenu.

You've now gone through the basic operation of the navigation portion of your new GPSCOM 170. Now let's move on to using the VHF radio.



Use the arrow keypad to select a submenu from the menu page. Press **ENTER** to access the selected submenu.

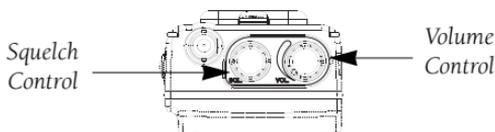
Using the VHF Transceiver

Important!

We strongly recommend obtaining a marine radio user's guide such as "Maritime Radio User's Handbook" published by the RTCM (Radio Technical Commission For Maritime Services), Washington, D.C., to ensure proper radio operation and protocol. Improper usage can result in fines levied on mariners by the FCC.

Using the VHF Transceiver

The first step in using the VHF transceiver is to make sure the volume and squelch controls are set correctly for proper reception.



1. Turn the VOL control clockwise to turn the unit on.
2. Rotate the SQL control fully counterclockwise. This state is known as "squelch off". Increase the volume to achieve a comfortable listening level.
3. Slowly turn the SQL control clockwise and stop slightly past the point where the noise disappears. This condition is known as the "squelch threshold".

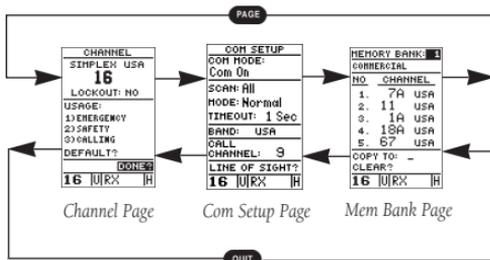
If the knob is turned past this point, weak signals may not be received. No noise and no signals are received until a signal with sufficient strength is received that exceeds the squelch threshold. When the GPSCOM 170 is in receive mode, 'RX' is displayed in the VHF status bar.

VHF Communication Pages

To move back and forth between the GPS and VHF pages, press **GPS COM**. There are three com VHF pages in a continuous loop: channel definition, com setup, and memory bank. Press **GPS COM** to exit the GPS pages and enter the com pages. Try scrolling through the com pages by pressing **PAGE**. You can also scroll in the opposite direction or return to a previous page by pressing **QUIT**. The function of each of the com pages is discussed in detail in the reference section.

CHANNEL	
SIMPLEX USA	
16	
LOCKOUT: NO	
USAGE:	
1) EMERGENCY	
2) SAFETY	
3) CALLING	
DEFAULT?	
DONE?	
16 URX H	

The current channel will always be displayed at the bottom left of every page.



Transmitting**Selecting a Channel**

The GPSCOM 170 operates on all U.S., Canadian, and International Marine VHF radio channels.

To select a channel from any page:

1. Use the UP and DOWN channel selection arrow keys to select the desired channel. The channel number will increase or decrease with each press—or if held, will continue to change the number as long as the key is held. The selected channel will always be displayed at the left hand side of VHF status bar.

Transmitting**To transmit:**

1. Press the push-to-talk (PTT) button. 'TX' appears in the VHF status bar when the PTT button is pressed. Speak slowly and clearly into the microphone. Hold the unit about 1/2 to 1 inch from your mouth.
2. Release the PTT button when you are finished speaking.

Tips on Transmitting

- Transmitting without an antenna connected to the GPSCOM 170 may damage the unit. See Appendix B for instructions on installing and removing the antenna. The GPSCOM 170 will not transmit using external power without the battery pack. Make sure the battery pack is installed.
- If the PTT button is held in for more than 35 seconds, the transmitter will automatically shut off. The message 'Stuck PTT' will also be displayed on the message page.
- The GPSCOM 170 gives you the option of transmitting using 1 watt or 5 watts of power. Transmitting at 1 watt power is a nice option so that short-range conversations won't interfere with a large number of boaters. Transmitting at 1 watt also prolongs battery life.

To switch between high and low power:

1. Press the transmitting power button to switch between low and high power.

Important!

Certain channels are set aside to be used by authorized stations for specific purposes, depending on the type of vessel (commercial or non-commercial). Full familiarization with channel usage is essential when selecting a channel.

COM SETUP		
COM MODE:	Com On	
SCAN:	All	
MODE:	Normal	
TIMEOUT:	1 Sec	
BAND:	USA	
CALL CHANNEL:	9	
LINE OF SIGHT?	16 U R X H	

An 'H' will be displayed in the right-hand side of the VHF status field for 5 watt operation, and an 'L' for 1 watt.

Selecting Channel 16/9

CHANNEL	
SIMPLEX USA	
16	
LOCKOUT: NO	
USAGE:	
1) EMERGENCY	
2) SAFETY	
3) CALLING	
DEFAULT? DONE	
16	U RX H

Channel 16 is used for emergency purposes and for initially contacting (hailing) another vessel.

CHANNEL	
DUPLEX WX	
1W	
LOCKOUT: NO	
USAGE:	
1) WEATHER	
2) RECEIVE ONLY	
3) -----	
DEFAULT? DONE	
1W	U RX H

A 'W' is displayed next to every selected weather channel.

Selecting Channel 16 and 9

The GPSCOM 170's channel 16/9 button provides quick access to channel 16 or 9.

To select channel 16:

1. Press 16/9.

To select channel 9:

1. Press 16/9 again.

Tips on Using Channel 16 and 9

- Channel 16 is used for emergency purposes and for initially contacting (hailing) another vessel.
- The use of channel 16 for hailing must be limited to initial contact only. Calling should not exceed 30 seconds, but may be repeated 3 times at two-minute intervals.
- In areas of heavy radio traffic, congestion on channel 16 resulting from its use as a hailing channel can be reduced significantly in U.S. waters by using channel 9 as the hailing channel for non-emergency communications.
- Before making contact with another vessel, refer to the RTCM marine radio user's guide to select an appropriate channel for communications after initial contact.

Selecting a Weather Channel

The GPSCOM 170 receives 10 weather channels, including all 7 National Weather Service channels in and around the U.S., and most Environment Canada Weather Radio broadcast stations.

To select a weather channel:

1. Press WX/CH. 'W' will be displayed next to the selected channel in the VHF status bar.
2. Use the UP and DOWN channel selection arrow keys to select the desired weather channel.
3. Press WX/CH to return to regular channels.

Dual Watch

Dual Watch scans between channel 16 and the last channel that was selected. It's handy when you need to monitor channel 16, but also want to listen to another channel for traffic.

To start dual-watch:

1. Press . The unit will scan between channel 16 and the last selected channel, stopping on the channel that has radio traffic. Once the radio traffic has stopped, the unit will resume scanning. To cancel dual watch press  twice or the PTT button once.

Congratulations! You've just completed the getting started tour! You now know enough about the GPSCOM 170 to go out and have some fun with it.

We strongly recommend that you read on and explore the reference section, which contains a closer look at all of the exciting features of the GPSCOM 170.

To turn the GPSCOM 170 off:

1. Turn the VOL control counterclockwise.

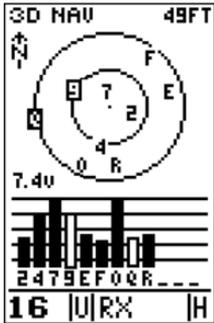
Thank you for choosing the GARMIN GPSCOM 170. We hope it will make your boating safer and more enjoyable.

Dual Watch

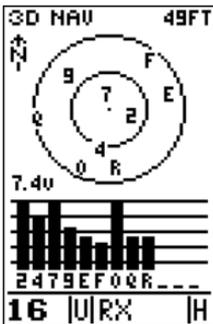
COM SETUP	
MODE:	Com On
SCAN:	Normal
All Channels	
TIMEOUT:	1 Sec
BAND:	USA
CALL	
CHANNEL:	9
LINE OF SIGHT?	
16	U DUAL H

Dual watch scans between channel 16 and the last selected channel.

Satellite Status Page

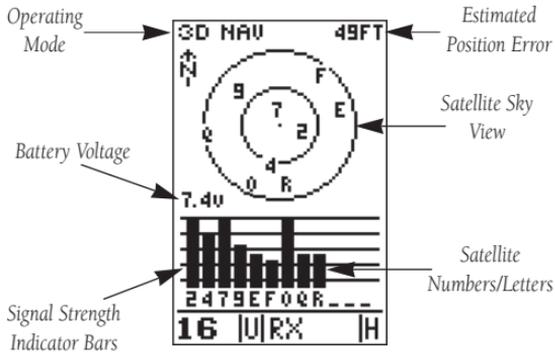


Satellites in view but not currently in use (Q & 9) will be displayed in reverse video, with a corresponding 'hollow' signal strength bar.



Once a satellite in view is usable for positioning, the satellite number will change from reverse video and the signal strength bar will become solid.

Satellite Status Page



The satellite status page displays the status of various receiver functions. The status information will help you understand what the GPSCOM 170 is doing at any given time, and tell you whether or not the receiver has calculated a position fix.

Sky View and Signal Strength Bars

The satellites are identified by letters and numbers. The sky view and signal strength bars give you an indication of what satellites are visible to the receiver, whether or not they are being used to calculate a position fix, and the signal quality. The sky view in the center of the page shows a bird's-eye view of the position of each satellite relative to the receiver's last known position. The outer circle represents the horizon (north up); the inner circle 45° above the horizon; and the center point a position directly overhead.

When the receiver is looking for a particular satellite, the corresponding signal strength bar will be blank and the sky view indicator will remain highlighted in reverse video. Once the receiver has found the satellite, a hollow signal strength bar will appear, indicating that the satellite has been found and the receiver is collecting data from it. The satellite number or letter in the sky view will also change from reverse video to normal presentation. As soon as the GPSCOM 170 has collected the necessary data to use the satellite for positioning, the hollow bar will become solid.

Receiver Status

Receiver Status

Receiver status is indicated at the top left of the screen, with the current horizontal accuracy (estimated position error, in feet or meters) at the top right. The status will show one of the following conditions:

Searching— the GPSCOM 170 is looking for any available satellites in view.

AutoLocate— the GPSCOM 170 is initializing and collecting new almanac data. This process can take 3 to 5 minutes.

Acquiring— the receiver is collecting data from available satellites, but has not collected enough data to calculate a 2D fix.

2D Navigation— at least three satellites with good geometry have been locked onto and a 2-dimensional position fix (latitude and longitude) is being calculated. '2D Diff' will appear when you are receiving DGPS corrections in 2D mode.

3D Navigation— at least four satellites with good geometry have been locked onto, and your position is now being calculated in latitude, longitude and altitude. '3D Diff' will appear when you are receiving DGPS corrections in 3D mode.

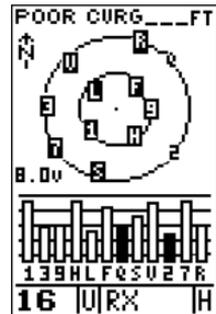
Poor GPS Coverage— the receiver is no longer tracking enough satellites for a 2D or 3D fix.

Not Usable— the receiver is unusable, possibly due to incorrect initialization or abnormal satellite conditions. Turn the unit off and back on to reset.

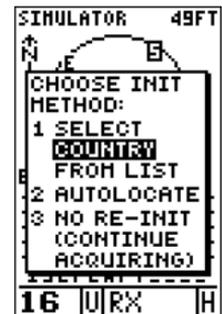
Simulator— the receiver is in simulator mode.

EZinit Prompt

The satellite status page also provides access to the EZinit prompt whenever a position fix has not been calculated (the unit must be in searching, AutoLocate, acquiring, simulator or poor coverage mode). This allows you to manually reinitialize the unit (see Appendix A for instructions), and is useful if you have travelled over 500 miles with the receiver off and you know it must be initialized to your new position. The GPSCOM 170 will automatically offer the EZinit prompt after 10 minutes of unsuccessful satellite acquisition.



A 'Poor Coverage' status will appear if the receiver has lost the satellites required to compute a fix. Make sure the internal antenna is not covered and has a clear view of the sky.

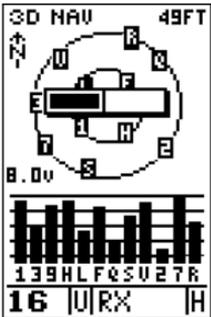


If you travel more than 500 miles with the receiver off, you may have to reinitialize it to your new location. To access the EZinit prompt, press ENTER from the status page before the receiver has acquired any satellites.

Screen Backlighting

IMPORTANT!

Using the screen backlighting can greatly affect battery life. If you're using your GPSCOM 170 primarily in daylight hours, you should keep the backlight timeout at the default 15 second setting.



Screen contrast is adjustable from the satellite status page.

Battery Voltage Indicator

The satellite status page displays current battery voltage for the Ni-Cad battery pack. When using the Ni-Cad pack, any voltage above 7.2 indicates a fully charged condition. You should charge the battery pack when the voltage is between 5.8 and 7.2. At 5.8 volts, you will get a low battery voltage message. At 5.5 volts, the Com and GPS functions shutoff. It is normal to see a drop in voltage when transmitting.

The trickle charger/AC adapter supplied with the GPSCOM 170 converts line voltage to the DC voltage necessary to operate the unit. The AC adapter also slowly recharges the Ni-Cad battery pack at a rate of 14 hours for a full recharge. Make sure you charge the Ni-Cad battery pack for 14 hours before using your GPSCOM 170 to ensure optimum capacity and performance. When charging the battery pack, be sure to turn the unit off to ensure a full charge.

Screen Backlighting and Contrast

If you want to see the display at night, you have to turn on the 'backlight' (which is a very small light bulb behind the screen). The bulb lights the screen display for a user-defined interval (the default is 15 seconds) after every keystroke. There are three levels of light intensity. When backlighting is on, a bulb icon will appear in the upper right-hand corner of the display. To adjust the length of time the backlighting will stay on, refer to system setup in the reference section.

To turn the screen backlighting on:

1. Press the backlight button. Cycle through the three levels of backlight by pressing the backlight button.

To turn the screen backlighting off:

1. Press the backlight button. Whenever the backlighting is off, the bulb icon disappears from the screen.

To set the screen contrast:

1. Use left and right arrow keys to adjust the bar scale for the desired contrast and press **ENTER**.

Position Page

Position Page

The GPSCOM 170's position page shows you where you are, what direction you're heading and how fast you are going (up to 99.9 mph), and is most useful when you are travelling without an active destination waypoint. A graphic compass tape at the top of the page displays your cardinal heading (while you're moving), with your current track and speed over the ground indicated below.

The rest of the page shows your present position in three dimensions (latitude, longitude and altitude). The units of measure for speed, distance, position and altitude are all user-selectable through the navigation setup menu (see page 59). The 12/24 hour clock and time offset options are available from the system setup menu (see page 57).

Trip Odometer

The position page also features a resettable trip odometer to measure the total distance travelled while navigating.

To reset the trip odometer:

1. Highlight the 'TRIP' field.
2. Press **ENTER** followed by the left arrow key.
3. Press **ENTER** to finish.

Altitude Display

When the GPSCOM 170 is acquiring satellites or navigating in the 2D mode, the last known altitude will be used to compute your position. If the altitude shown is off by several hundred feet, you can manually enter your altitude for greater accuracy. Note that GPS altitudes can fluctuate due to errors.

To enter your altitude:

1. Highlight the 'ALT' field. Press **ENTER** to begin entry of your altitude.
2. Use the arrow keypad to enter a value in each character field and to move to the next character position.
3. Press **ENTER** to confirm the altitude.

330 345 N 015 0	
TRACK	SPEED
356°	0.9%
TRIP	ALT
002.0%	181F
N 39°00.003'	
W095°00.000'	
10:33:44	
16	U RX H

The speed displayed on the position page may fluctuate at slow speeds (or when you're standing still).

330 345 N 015 0	
TRACK	SPEED
356°	1.9%
TRIP	ALT
000.0%	181F
N 39°00.019'	
W095°00.000'	
10:34:12	
16	U RX H

To reset the trip odometer, highlight the trip field and press **ENTER**. Use the **LEFT** arrow key to clear the distance field and press **ENTER** to confirm.

Marking & Saving Waypoints

MARK POSITION
Waypoint: 001
N 39°00.046' W095°00.000'
Add to route number: __
SAVE?
16 U R X H

The GPSCOM 170 will save new waypoints with a default three-digit name.

MARK POSITION
Waypoint: REEF
N 39°00.046' W095°00.000'
Add to route number: 3
SAVE?
16 U R X H

You may add a new waypoint to the end of any storage route by entering the desired route number in the route field before saving the waypoint.

Marking and Saving Waypoints

Knowing your present position is only part of any navigation equation. You also need to keep track of where you've been and where you are going. Waypoints serve as electronic markers that let you keep track of starting points, destinations, nav aids and any other important position.

The GPSCOM 170 allows you to mark, store and use up to 250 waypoints. A waypoint position can be entered by taking an instant electronic fix or by manually entering a coordinate or range and bearing in reference to an existing waypoint. If you try to mark a waypoint without having a position fix, you'll be notified with a 'No GPS Position' message.

To mark your present position:

1. Press **MARK** to capture your position.

The mark position page will appear, showing the captured position and a default 3-digit waypoint name.

To change the default position name:

1. Press the up arrow key twice to move the field highlight from the 'SAVE?' field to the name field.
2. Press **ENTER** to begin entry of the name. Pressing the left arrow key will clear any existing data.
3. Use the arrow keypad to enter a value in the appropriate character field, and to move to each character position.
4. Press **ENTER** to confirm the waypoint name. The field highlight will move to the 'route number' field.

If you'd like to add this waypoint to a route:

1. Press **ENTER**.
2. Use the arrow keypad to enter a route number.
3. Press **ENTER** to confirm the route number.
4. Press **ENTER** again to save the waypoint.

If you do not want to add this waypoint to a route:

1. Highlight the 'SAVE?' field and press **ENTER**.

Waypoint Submenus

The GPSCOM 170 has three waypoint submenu pages that let you manage a large number of waypoints quickly and efficiently. The nearest waypoints, waypoint list and waypoint definition pages are accessed through the menu page.

To select a waypoint submenu page:

1. Press **PAGE** or **QUIT** until the menu page appears.
2. Highlight the waypoint submenu page you want to use.
3. Press **ENTER** to display the submenu page.
4. To return to the menu page, press **PAGE**.

Nearest Waypoints Page

The nearest waypoints page shows the nine nearest waypoints that are within 100 miles of your present position, with the bearing and range noted for each waypoint. During an emergency, the nearest waypoints page can give you the closest points of safety in your area. The nearest waypoints page will also let you retrieve a waypoint definition page or GOTO a selected waypoint right from the list.

To review the waypoint definition page of a highlighted waypoint from the list:

1. Press **ENTER**.

To return to the nearest waypoint page (when the 'DONE' field is highlighted):

1. Press **ENTER**.

To GOTO a highlighted list waypoint:

1. Highlight a listed waypoint.
2. To select a highlighted nearest waypoint as a destination, press **GOTO**.
3. Once the GOTO waypoint page appears, press **ENTER** to confirm the selected waypoint as your destination.

MENU		
NEAREST WPTS		
WAYPOINT LIST		
WAYPOINT		
ROUTES		
DIST AND SUN		
MESSAGES		
SYSTEM SETUP		
NAV SETUP		
MAP SETUP		
TRACK LOG		
INTERFACE		
16	U/RX	H

To select a waypoint submenu, highlight the desired option and press **ENTER**.

NEAREST WPTS		
WAYPNT	BRG	DST
HOME	337'	0.08
DOCK	295'	0.12
FISH	337'	33.1
DIUE	049'	38.7
REEF	214'	50.8
FUEL	295'	81.4
-----	---	---
-----	---	---
-----	---	---
16	U/RX	H

Nearest Waypoints Page

The compass heading (BRG) and distance (DST) to the nine nearest waypoints are updated continuously.

Creating & Using Waypoints

```

WAYPOINT LIST
244 EMPTY 6USED
DIVE
DOCK
FISH
FUEL
HOME
REEF
-----
DEL ALL WPTS?
16 U|RX |H
  
```

Waypoint List Page

The total number of used and available waypoints is indicated at the top of the page.

```

DEL ALL WPTS
HARNING!
all user defined
waypoints and
routes will be
deleted
Are you sure
Yes or No?
16 U|RX |H
  
```

Deleting all user waypoints will also delete all routes stored in memory.

Waypoint List Page

The waypoint list page provides you with a complete list of all waypoints currently stored in the unit. The total number of used and empty waypoints is indicated above the waypoint list. From the waypoint list page, you can retrieve a waypoint definition page, delete all user-defined waypoints, or GOTO a selected waypoint.

If a waypoint is currently used in a route, the lowest route number will be indicated to the left of the waypoint name.

To review the waypoint definition page of a highlighted list waypoint:

1. Press **ENTER**.

To return to the waypoint list page (with the 'DONE' field highlighted):

1. Press **ENTER**.

To GOTO a list waypoint:

1. Use the arrow keypad to scroll through the list and select a waypoint.
2. To select a highlighted waypoint as a destination, press **GOTO**.
3. Once the GOTO waypoint page appears, press **ENTER** to confirm the selected waypoint as your destination.

To delete all user-defined waypoints:

1. Use the arrow keypad to move the cursor highlight to the 'delete all waypoints' field and press **ENTER**.

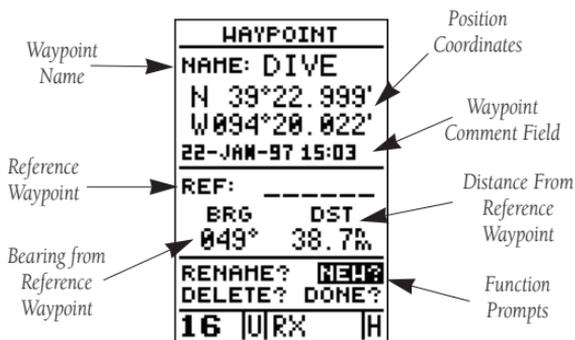
A warning page will appear, asking if you are sure you want to delete all user-defined waypoints and routes. If you want to continue and delete:

1. Press the left arrow key to highlight the 'Yes' field.
2. Press **ENTER**.
3. Press the left arrow key to return to the menu page.

If you do not want to delete all waypoints:

1. Press **ENTER** with the 'No?' field highlighted.

Waypoint Definition Page



The last of the three waypoint submenu pages is the waypoint definition page. This page lets you create new waypoints manually, or review and edit existing waypoints. To create a new waypoint manually, you'll need to know its position coordinates or its distance and bearing from an existing waypoint.

To create a waypoint by entering coordinates:

1. If a waypoint is currently displayed in the name field, highlight 'NEW?' and press **ENTER**. Then press the left arrow key to clear the name field.
2. If a waypoint is not displayed, move the cursor to the name field and enter the new waypoint's name.
3. Use the arrow keypad to enter your waypoint name and to move to the next character position.
4. Press **ENTER** to confirm the waypoint name. The position field will now become highlighted, with the receiver's last known position shown, if one exists.
5. Press **ENTER** to begin entry of the position.
6. Use the arrow keypad to enter your position, and to move to each character field.
7. Press **ENTER** to confirm and save your coordinates. The default waypoint comment (UTC date and time of creation) will appear, and the highlight will move to 'DONE?'.
8. Press **ENTER** to return to the menu page.

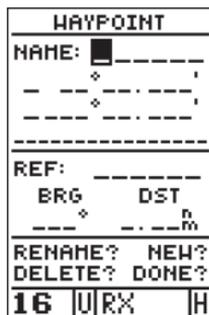
REFERENCE

Creating & Using Waypoints



Wpt Definition Page

Use the waypoint definition page to review, rename or delete stored waypoints and to create new waypoints manually.



After selecting entry of a 'NEW' waypoint, an empty waypoint screen will appear. Note: You must enter a name for the waypoint or the highlight will not advance to the next field.

Creating & Using Waypoints

WAYPOINT	
NAME: DIVE	
N 39°22.999'	
W094°20.022'	
22-JAN-97 15:03	
REF: _____	
BRG	DST
049°	00.00
RENAME?	NEW?
DELETE?	DONE?
16	URX H

To re-define an existing waypoint's position coordinates from the waypoint definition page, simply highlight the DST field and press ENTER. Use the LEFT arrow key to set the distance to 0.00, and press ENTER to confirm.

The old coordinates will be replaced by the coordinates of your present position (you must have a valid 2D- or 3D- position fix).

Reference Waypoints

To create a new waypoint manually without knowing its position coordinates, you'll need to enter its bearing and distance from an existing waypoint, or your present position. The GPSCOM 170 will then calculate the position coordinates for you.

WAYPOINT	
NAME: DIVE	
N 39°22.999'	
W094°20.022'	
22-JAN-97 15:03	
REF:	ISH__
BRG	DST
049°	38.70
RENAME?	NEW?
DELETE?	DONE?
16	URX H

To create a new waypoint by referencing a known waypoint:

1. Highlight the 'NEW?' field and press **ENTER**.
2. Enter the name of your new waypoint.
3. Press **ENTER** to confirm the waypoint name. The position field will now become highlighted, with the receiver's last known position shown.
4. Move the cursor to the reference field.
5. Press **ENTER** to begin entry of the reference waypoint. Leave the reference field blank to use your present position.
6. Use the arrow keypad to enter the waypoint name.
7. Press **ENTER** to confirm your entry.
8. Enter the bearing and distance of your new waypoint from the reference waypoint. Remember to use the **ENTER** key to begin entry and confirm each field. The coordinates will be calculated and saved for your new waypoint.
9. Press **ENTER** (with the 'done' field highlighted) to return to the menu page.

Creating & Using Waypoints

Editing Existing Waypoints

The waypoint definition page also allows you to change the name, coordinates, comment or reference waypoint field for a stored waypoint.

To edit the name, coordinates, comment, or reference waypoint field:

1. Highlight the field you want to edit. Press **ENTER** to begin entry in the selected field.
2. Enter your new data.
3. Press **ENTER** to confirm your changes.

Waypoint Comments

Each waypoint stored in the GPSCOM 170 has a user-defined 16 character comment field. The default comment is the UTC date and time of the waypoint's creation.

To change or add a comment:

1. Highlight the comment field. Use the left arrow of the arrow keypad to clear the comment field.
2. Press **ENTER** to begin entry of your comment.
3. Enter the comment and press **ENTER** to confirm.

Renaming and Deleting Waypoints

RENAME WAYPNT	
From	
DIVE	
To:	
BUOY	
Are you sure	
Yes? or No?	
16	 URX H

The rename and delete function fields are located at the bottom left of the waypoint definition page (you'll need to use the arrow keypad to move the field highlight out of its standard up-and-down scrolling sequence).

WAYPOINT	
NAME:	DIVE
N	39°22.999'
W	094°20.022'
BOA	-----
REF:	-----
BRG	DST
049°	38.7%
RENAME?	NEW?
DELETE?	DONE?
16	 URX H

The waypoint comment field will automatically assign the date and time of creation to the waypoint comments field. You may enter a 16-character user comment at any time.

WAYPOINT	
NAME:	DIVE
N	39°22.999'
W	094°20.022'
BOA	-----
REF:	-----
BRG	DST
049°	38.7%
RENAME?	NEW?
DELETE?	DONE?
16	 URX H

To access the rename function from the waypoint definition page, highlight the 'RENAME?' prompt and press ENTER.

Creating & Using Waypoints

```

DELETE WAYPNT
HARNING!
FISH
will be deleted
Are you sure
Yes? or No?
16 |U|RX |H
  
```

To delete a waypoint, confirm the 'Yes?' prompt. Route or active waypoints may not be deleted until they are removed from the route or the GOTO has been cancelled.

```

WAYPOINT
NAME: FISH__
-----
REF: -----
BRG   DST
-----
RENAME? NEW?
DELETE? DONE?
16 |U|RX |H
  
```

The waypoint scanning feature will offer the first waypoint that matches the character or characters you have entered to that point.

To rename a stored waypoint:

1. Highlight the 'RENAME?' field and press **ENTER**.
2. Enter the new waypoint name and press **ENTER**.
3. Press **ENTER** to confirm your changes.

To delete a stored waypoint (you can't delete a route waypoint without deleting it from a route):

```

WAYPOINT
NAME: FISH
N 39°31.211'
W 095°14.119'
22-JAN-97 15:02
REF: -----
BRG   DST
337° 33.1M
RENAME? NEW?
DELETE? DONE?
16 |U|RX |H
  
```

1. Highlight the 'DELETE?' field, press **ENTER**, and select 'YES'.
2. Press **ENTER** to delete the waypoint.

Scanning Waypoints

As you manually enter a waypoint's name, the GPSCOM 170's waypoint scanning feature will automatically display the first numerical or alphabetical match of the character you have entered to that point. This helps eliminate the need to enter a waypoint's complete name.

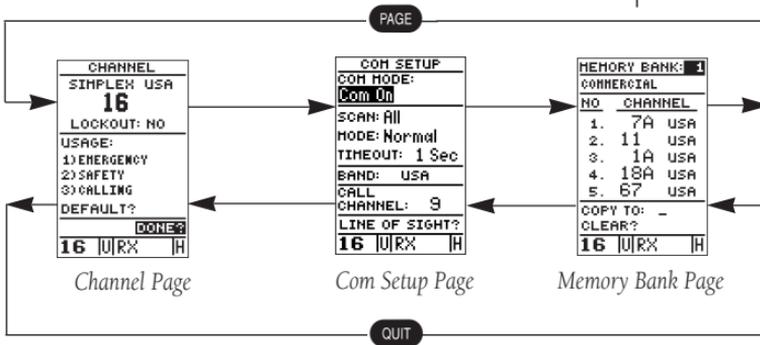
To scan waypoints from a waypoint field:

1. Highlight the waypoint name field and press **ENTER**.
2. Press the left arrow key to clear the name field.
3. Use the keypad to scroll through waypoints.
4. If you have more than one waypoint that begins with the same letter or number, you must use the right arrow key to move to the next character positions as needed. Only the first character match is listed for each character set.
5. Once you've found the desired waypoint, press **ENTER**.

VHF Com Pages

VHF Communication Pages

To move back and forth between the GPS and VHF pages, press the **GPS COM** key. There are three com VHF pages in a continuous loop: channel definition, com setup, and memory bank. Press **GPS COM** to exit the GPS pages and enter the com pages. Try scrolling through the com pages by pressing **PAGE**. You can also scroll in the opposite direction or return to a previous page by pressing **QUIT**.



Press **PAGE** repeatedly until you access the com setup page.

Com Setup Page

The com setup page allows you to do the following:

- Change the mode of operation
- Customize the scanning setup
- Set the timeout feature (scanning delay)
- Select the band of operation
- Change the call channel
- Access the line of sight calculator page

COM SETUP
COM MODE:
Com On
SCAN: All
MODE: Normal
TIMEOUT: 1 Sec
BAND: USA
CALL
CHANNEL: 9
LINE OF SIGHT?
16 U R X H

Com Setup Page

VHF Operating Modes

COM SETUP	
COM MODE:	Com Off?
SCAN:	All
MODE:	Normal
TIMEOUT:	1 Sec
BAND:	USA
CALL CHANNEL:	9
LINE OF SIGHT?	
16	U RX H

Selecting a com mode on the com setup page.

WEATHER ALERT	
Audio:	Unmuted
No Alert Tone Detected	
PRESS GPS/COM KEY TO QUIT	
8W	U Alert H

Weather Alert Page

Three operating modes are available:

- **Com On**— (Default) Enables all VHF communication features.
- **Com Off**— Disables all VHF communication features. Use this mode if you only want to use GPS or if battery life is a concern.
- **Weather Alert**— Accesses the weather alert audio page. Muting the weather broadcast audio will cause the GPSCOM 170 to remain silent until the National Weather Service activates an alert tone.

To select an operating mode:

1. Highlight the 'Com Mode' field and press **ENTER**.
2. Use the arrow keypad to select an option, and press **ENTER** to confirm your choice.

Selecting the weather alert mode option accesses the weather alert page where you can choose to mute the weather broadcast audio. The receiver will unmute and remain unmuted once a severe weather tone is received from the NWS.

To mute the weather broadcast audio:

1. Highlight the 'Com Mode' field and press **ENTER**.
2. Use the arrow keypad to select 'Weather Alert?' and press **ENTER**. The weather alert mode submenu will appear with the audio field highlighted.
3. Press **ENTER** to select 'Mute'.
4. Press **GPS COM** to exit the weather alert mode page.

Scanning Setup & Modes

Scanning Setup

The com setup page also provides for scanning setup. The GPSCOM 170 scans, which means it automatically listens to a number of channels in rapid succession, hesitates on an active channel until the conversation stops, and then moves on to the next channel.

The GPSCOM 170 can be programmed to scan all channels for the band you have selected, or scan a bank of memory channels.

To select a scanning type:

1. On the com setup page, highlight 'SCAN' field and press **ENTER**.
2. Use the arrow keys to select the desired memory bank or 'ALL CHANNELS'.
3. Press **ENTER** to confirm the selection.
4. Press **SCAN** to activate the scanning.
5. Press **SCAN** or PTT to stop scanning.

Scanning Modes

The GPSCOM 170 has two scanning modes: normal and priority.

Normal scanning (the default setting) scans through all channels/memory channels in sequence. Channel 16 is checked in sequence as with the other channels.

Priority scanning scans through all channels/memory channels in sequence while constantly monitoring channel 16. When a signal is detected on channel 16, the unit pauses on channel 16 until the signal disappears. When a signal is detected on a channel other than 16, channel 16 will be monitored every 2 seconds.

To select priority scan:

1. Highlight 'COM MODE' field and press **ENTER**.
2. Use the arrow keypad to select 'Priority' and press **ENTER**.
3. Press **ENTER** to confirm the selection.

COM SETUP		
COM MODE:	Com On	
SCAN:	All	
MODE:	Normal	
TIMEOUT:	1 Sec	
BAND:	USA	
CALL CHANNEL:	9	
LINE OF SIGHT?	16 U RX H	

Selecting 'ALL CHANNEL' scanning.

COM SETUP		
COM MODE:	Com On	
SCAN:	All	
MODE:	Priority	
TIMEOUT:	1 Sec	
BAND:	USA	
CALL CHANNEL:	9	
LINE OF SIGHT?	16 U RX H	

The GPSCOM 170 in priority scan mode.

Changing Call Channels

COM SETUP		
COM MODE:	Com On	
SCAN:	All	
MODE:	Priority	
TIMEOUT:	1 Sec	
BAND:	USA	
CALL CHANNEL:	9	
LINE OF SIGHT?		
16	U/RX	H

The GPSCOM 170 is initially set for U.S. operation.

COM SETUP		
COM MODE:	Com On	
SCAN:	All	
MODE:	Priority	
TIMEOUT:	1 Sec	
BAND:	USA	
CALL CHANNEL:	10	
LINE OF SIGHT?		
16	U/RX	H

Changing the call channel on the com setup page.

Scan Timeout

After each transmission has ended, you may want to enter a 2-3 second delay, allowing you to hear both sides of a conversation. This delay is put on all channels.

To enter a delay time:

1. Highlight the 'TIMEOUT' field and press **ENTER**.
2. Use the arrow keypad to select a desired delay time up to 99 seconds and press **ENTER**.

Selecting an Operating Band

Selecting an operating band selects a pre-programmed group of channels which covers operation in U.S., Canadian, or International waters. The default setting for band operation is USA.

To change the operating band:

1. Highlight the 'BAND' field and press **ENTER**.
2. Use the arrow keypad to select USA, Canada, or INT'L and press **ENTER**.
3. Press **ENTER** to confirm the selection.

Calling Channel

The calling or hailing channel is the channel used to initiate a call to another vessel, typically Channel 16 or 9. You can change the call channel on the com setup page. Note: When the call channel is changed, the new call channel becomes the second channel in both dual and tri watch.

To change the call channel:

1. Highlight the 'CALL CHANNEL' field.
2. Use the UP or DOWN channel selection keys to select a new channel and press **ENTER** to confirm.

VHF Line-of-Sight Calculator Page

The GPSCOM 170's line-of-sight calculator page can be used to estimate the transmitting and receiving distance between the unit and another station.

Regardless of transmitter power, VHF marine radio's transmitting and receiving range is generally limited by "line of sight." This means that you must be located such that land masses, the curvature of the earth, or anything else that would limit your ability to see in a straight line does not substantially come between your antenna and the antenna you are communicating with.

If you know the height of your vessel's receiving antenna and the height of the transmitting antenna at the station you desire to receive from, the probable range of communications can be automatically calculated using the line-of-sight calculator page.

To access the line of sight calculator page from the com setup page:

1. Highlight the 'LINE OF SIGHT' field and press **ENTER**.

The top section of the line of sight calculator page displays the transmitting antenna height field and receiving antenna height field. The bottom of the page displays the line-of-sight calculation field.

To determine an approximate line of sight distance:

1. Highlight the 'Transmitting Antenna Height' field and press **ENTER**.
2. Using the arrow keypad, enter the known height of your antenna (the default value is 5 ft., which is the approximate height from the deck to bottom of the flex antenna with the radio being held in your hand. After you enter a height, press **ENTER**.
3. Highlight the 'Receiving Antenna Height' field and press **ENTER**.
4. Enter the known height of the receiving antenna using the arrow keypad and press **ENTER**.
5. The approximate line of sight distance (the probable range of communication) will appear in the 'LINE OF SIGHT' field.

Line-Of-Sight Calculator Page

LINE OF SIGHT	
Transmitting Antenna Height:	5.0%
Receiving Antenna Height:	5.0%
Line of Sight	5.3%
16	U/RX H

*Line-Of-Sight
Calculator Page*

IMPORTANT!

Antenna height, more than any other factor, is responsible for determining how far you can transmit. An antenna which is mounted up high can "see" farther over the horizon.

Memory Bank Page

MEMORY BANK: 1	
COMMERCIAL	
NO	CHANNEL
1.	7A USA
2.	11 USA
3.	1A USA
4.	18A USA
5.	67 USA
COPY TO: -	
CLEAR?	
16	URX H

Memory Bank Page

MEMORY BANK: 1	
COMMERCIAL-----	
NO	CHANNEL
1.	7A USA
2.	11 USA
3.	1A USA
4.	18A USA
5.	67 USA
COPY TO: -	
CLEAR?	
16	URX H

Entering memory bank user comments.

Memory Bank Page

The memory bank page lets you store five groups of channels for custom scanning, complete with user comments. The memory channels are partitioned into “banks”, specifically 5 banks of 10 channels each. The memory banks are numbered 1-5 and displayed at the top of the page. From the memory bank page you’ll be able to perform the following functions:

- Select a numbered bank
- Enter user comments
- Enter channels into memory
- Copy a bank’s contents to another bank
- Clear (delete) a bank

From the com page group, press **PAGE** repeatedly until the memory bank page appears.

To select a numbered bank:

1. Highlight the ‘MEMORY BANK’ field and press **ENTER**.
2. Use the arrow keypad to select the desired bank.

To enter user comments:

1. Highlight the comment field and press **ENTER**. The first character position of the comment field is highlighted. Press the left arrow key on the arrow keypad to clear the field.
2. Enter a character using the arrow keypad. Once the desired character is selected, move to the next character position using the right arrow on the arrow keypad. You can enter up to 16 characters.
3. Press **ENTER** to confirm the entry.

If an error is made during entry, use the right or left arrow keys on the arrow keypad to move to the position containing the incorrect character. Enter the correct character and press **ENTER** when you are finished.

Memory Bank Page

To enter channels:

1. Highlight the first blank 'CHANNEL' field and press **ENTER**.
2. Enter a channel of your choice using the arrow keypad and press **ENTER**. The appropriate band for the channel you have selected will be displayed next to the channel number.
Note: You cannot enter weather channels into memory, nor can you enter channels of different bands in the same bank.

Copying and Clearing

The bottom of the memory bank page displays the 'COPY TO' and 'CLEAR' fields which allow you to copy a list to another bank or clear a list completely.

To copy a list to another bank:

1. Highlight the 'COPY TO' field and press **ENTER**.
2. Enter the bank number that you want the currently displayed list copied to and press **ENTER**.

Individual or groups of channels within a bank cannot be copied.

To remove (delete) all channels from a memory bank:

1. Highlight the 'CLEAR' field and press **ENTER**. A warning page will appear asking you if you are sure you want to remove all the channels from the bank.
2. Select 'YES?' and press **ENTER**.

Memory List Editing

Once a list has been entered into a bank, it can be edited at any time.

To edit a list:

1. Use the arrow keypad to select the channel you want to edit and press **ENTER**.

An on-screen menu of editing choices will appear, with options for selecting, inserting, removing or changing the highlighted channel. Use the arrow keys to select among the editing choices and press **ENTER**.

MEMORY BANK: 1		
COMMERCIAL		
NO	CHANNEL	
2.	11	USA
3.	1A	USA
4.	18A	USA
5.	67	USA
6.	--	--
COPY TO: -		
CLEAR?		
16	U/RX	H

You cannot enter weather channels into memory, nor can you enter channels of different bands in the same bank.

CLEAR BANK		
WARNING!		
all channels		
will be removed		
from this		
memory bank		
Are you sure		
Yes? or No?		
16	U/RX	H

'CLEAR BANK' warning page.

Channel Definition Page

CHANNEL		
SIMPLEX USA		
16		
LOCKOUT: NO		
USAGE:		
1) EMERGENCY		
2) SAFETY		
3) CALLING		
DEFAULT?		
DONE?		
16	U RX	H

Channel Definition Page

CHANNEL		
DUPLEX USA		
25		
LOCKOUT: NO		
USAGE:		
1) <input checked="" type="checkbox"/> PUBLIC CORRESP		
2) SHIP-TO-SHORE		
3) -----		
DEFAULT?		
DONE?		
25	U RX	H

Changing a default definition setting.

- **SELECT**— To select the active channel and display the channel usage page, highlight the 'SELECT' prompt and press **ENTER**.
- **INSERT**— To insert a new channel, highlight the 'INSERT?' prompt and press **ENTER**.
- **REMOVE**— To remove the selected channel, highlight the 'REMOVE' prompt and press **ENTER**.
- **CHANGE**— To replace the selected channel with a new channel, highlight the 'CHANGE' prompt and press **ENTER**.

Channel Definition Page

The GPSCOM 170's channel definition page reviews lockout and usage information for the active channel.

The top section of the page displays the current (active) channel number, mode of operation (simplex or duplex), band of operation (USA, Canada, or International)—(or 'WX' for a weather channel), and the 'LOCKOUT' field.

Channel Definitions

There is a maximum of three definition fields for each channel, with the FCC's default channel usage displayed. If the designated usage for a channel should ever change due to a change in regulations, you can change the definition accordingly.

To change a channel definition:

1. Highlight the definition field you want to change and press **ENTER**.
2. Use the arrow keypad to scroll through the list of available definitions and press **ENTER** to confirm the selection.

Just below the channel definition list is the 'DEFAULT?' prompt which allows you to return the channel definitions back to their original (default) settings.

To return the definitions back to their default settings:

1. Highlight 'DEFAULT?' and press **ENTER**.

The 'DONE?' prompt located below the 'DEFAULT?' prompt confirms any changes that were made and returns you to the previously viewed page.

To confirm changes made on the channel definition page and return to the previously viewed page:

1. Highlight 'DONE?' and press **ENTER**.

Channel Lockout

Channel lockout allows you to bypass a channel during scanning.

To lock a channel out:

1. Highlight 'LOCKOUT' and press **ENTER**.
2. Use the arrow keys to select 'YES'.
3. Press **ENTER** to confirm.
4. To unlock a channel, repeat the steps above (except select 'NO' in step 2).

CHANNEL	
SIMPLEX USA	
17	
LOCKOUT: YES	
USAGE: (1H ONLY)	
1) STATE CONTROL	
2) -----	
3) -----	
DEFAULT?	
DONE?	
17	U RX L

Channel Lockout

MEMORY	
SIMPLEX USA	
16	
USAGE:	
1) EMERGENCY	
2) SAFETY	
3) CALLING	
Add to	
Memory Bank: 1	
SAVE?	
16	U RX H

Memory Page

MEMORY	
SIMPLEX USA	
16	
USAGE:	
1) EMERGENCY	
2) SAFETY	
3) CALLING	
Add to	
Memory Bank: 2	
SAVE?	
16	U RX H

Adding a channel to memory bank 2 from the memory page.

Memory Page/Tri Watch

CHANNEL	
DUPLEX USA	
25	
LOCKOUT: NO	
USAGE:	
1) PUBLIC CORRESP	
2) SHIP-TO-SHORE	
3) -----	
DEFAULT?	
DONE?	
25	U TRI H

When the unit is in tri watch mode, 'TRI' is displayed in the VHF status bar.

IMPORTANT!

The GPSCOM 170 gives you the option of transmitting using 1 watt or 5 watts of power. Transmitting at 1 watt of power is useful for short-range conversations and won't interfere with a large number of boaters. Transmitting at 1 watt also prolongs battery life. The VHF status bar will display an 'L' when 1 watt is being used or an 'H' when 5 watts is selected.

Memory Page

The memory page (see sidebar, page 37) allows you to easily add the active channel to a memory bank. It also displays channel number, type (duplex/simplex), band (US, Canada, International), and channel usage.

To select the memory page:

1. Press **MEM**.

To add a channel to memory from the memory page:

1. Highlight 'Add to the 'Memory Bank' field and press **ENTER**. Select the desired bank number using the arrow keypad.
2. Highlight 'SAVE?' and press **ENTER**. The channel is now saved to the bank you selected.

Tri Watch

In addition to dual watch scanning (see the getting started section) a tri watch mode is available. Tri watch scans between channel 16, 9 (or whatever the call channel is set to) and the last selected channel. This feature is handy when you need to monitor channel 16 for emergency communication, but also want to listen to channel 9 for hailing calls, and a third channel for another purpose.

To activate tri watch:

1. Press **DUAL TRI** twice. The unit will scan between channel 16, 9 and the last selected channel, stopping when traffic is detected. Press **DUAL TRI** or PTT to cancel tri watch.

Power Override

On certain channels, the FCC requires the transmitting power to be limited to, and remain at one watt (see Appendix C). The default setting on these channels is one watt and cannot be changed. There are also some one watt 'initial' channels, in which the FCC allows the power to be increased to five watts under certain circumstances.

To switch to five watts:

1. Press the transmit power button which is located below the PTT button.

GOTO & MOB Navigation

Selecting a GOTO Destination

The GPSCOM 170 provides four ways to navigate to a destination: GOTO, MOB, TracBack and route navigation. The most basic method of selecting a destination is the GOTO function, which lets you choose any stored waypoint as the destination and quickly set a direct course from your present position.

To activate the GOTO function:

1. Press **GOTO**. The GOTO waypoint list, an alphabetical list of all available waypoints, will appear.
2. Select the waypoint you want to navigate to (it may already be highlighted).
3. Press **ENTER** to confirm, or **QUIT** to stop selection of a GOTO destination and return to the previous page.

Once a GOTO waypoint has been activated, the GPSCOM 170 will provide steering guidance to the destination until either the GOTO is cancelled or the unit has resumed navigating the active route (see page 46).

To cancel an active GOTO:

1. Press **GOTO**.
2. Use the arrow keypad to move the field highlight to the 'CANCEL GOTO?' prompt at the bottom of the page and press **ENTER**.

Man Overboard Function

The GPSCOM 170's man overboard function (MOB) lets you simultaneously mark and set a course to a position for quick response to passing positions (like the spot where your hat blew overboard).

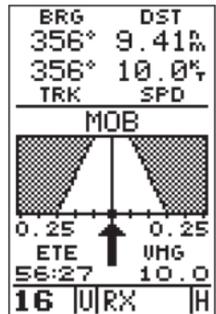
To activate the MOB mode:

1. Press **GOTO** twice. The GOTO waypoint page will appear with 'MOB' selected as the default destination.
2. Press **ENTER** to begin MOB navigation.

The GPSCOM 170 will now guide you to the MOB waypoint until the MOB GOTO is cancelled (see "cancel GOTO" above). If you want to save the MOB waypoint, be sure to rename it, because it will be overwritten the next time a MOB is executed.



Select a destination waypoint from the GOTO waypoint list.



Once the MOB mode has been activated, steering guidance will be provided by the compass or highway page. Activating another MOB will overwrite the previous MOB waypoint.

TracBack Navigation

TRACK LOG	
RECORD:	Yes
CRITERIA:	Automatic
MEMORY USED	0%
	6 OF 768 PNTS
CLEAR LOG?	
TRACEBACK?	
16	U R X H

Clearing the log before you get started will define the position the TracBack function will return you to.

TRACK LOG	
RECORD:	Yes
CRITERIA:	Automatic
MEMORY USED	0%
	7 OF 768 PNTS
CLEAR LOG?	
TRACEBACK?	
16	U R X H

Highlight the 'TRACEBACK' prompt and press ENTER to begin TracBack navigation. An on-screen status box will monitor the progress of the TracBack calculation.

TracBack Navigation

The third method of navigating to a destination is by using the GPSCOM 170's TracBack feature. The TracBack function allows you to quickly and easily retrace your path using the track log automatically stored in the receiver's memory. The advantage of the TracBack feature is to eliminate the need to mark waypoints along the way and manually create and activate a route back to where you began your trip.

The TracBack route is created by reducing your current track log into a route of up to 30 waypoints, and activating an inverted route along those points. Once activated, a TracBack route will lead you back to the oldest track log point stored in memory, so it's usually a good idea to clear the existing track log at the starting point of your current trip (e.g. the dock) before you get started.

To clear the track log and define a starting point for a TracBack route:

1. From the map page, press **ENTER**. Highlight the 'TRACK SETUP?' option and press **ENTER**. The track log page will appear.
2. Use the arrow keypad to highlight 'CLEAR LOG' and press **ENTER**. The clear log confirmation page will appear. Highlight 'YES' and press **ENTER**.

To activate a TracBack route:

1. From the map page, press **ENTER** and highlight the 'TRACK LOG' option.
2. Press **ENTER** to access the track log page.
3. Highlight the 'TRACEBACK?' option and press **ENTER**.

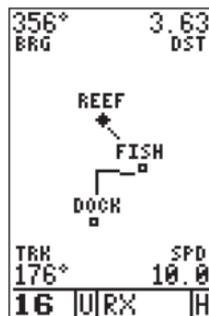
Once the TracBack function has been activated, the unit will take the track log currently stored in memory and divide it into segments called legs. Up to 30 temporary waypoints (e.g., 'T001') will be created to mark the most significant features of the track log in order to duplicate your exact path as closely as possible. A TracBack route from your present position to the oldest track log point will be created as the active route (the active route page will appear), and provide steering guidance to each waypoint back to the starting point of your track log.

Tips on Using TracBack

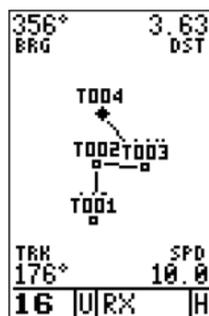
To get the most out of the TracBack feature, remember the following tips:

- Always clear your track log at the exact point that you want to go back to (trail head, truck, dock, etc.). The 'RECORD' option on the track log setup page must be set to the 'Yes' position.
- There must be at least two track log points stored in memory to create a TracBack route.
- If there are not enough available waypoints in memory to create a TracBack route, you will be alerted with a 'waypoint memory full' message, and the receiver will use any available waypoints to create a TracBack route with an emphasis on the track log point closest to the destination (the oldest track log point in memory).
- If the 'CRITERIA' option on the track log setup page is set to a time interval, the TracBack route may not follow your exact path (keeping the criteria set to automatic will always provide the best TracBack route).
- If the receiver is turned off or you lose satellite coverage during your trip, the TracBack route will simply draw a straight line between any point where coverage was lost and where it resumed.
- If the changes of direction and distance of your track log are very complex, 30 waypoints may not be enough to accurately mark your exact path. The receiver will then assign the 30 waypoints to the most significant points of your track, and simplify segments with fewer changes in direction.
- If you want to save a TracBack route, copy route 0 to an open storage route before activating another TracBack. Activating another TracBack or storage route will overwrite the existing TracBack route.
- Whenever a TracBack route is activated, the receiver will automatically erase any temporary waypoints (e.g., 'T001') that are not contained in routes 1-19. If there are temporary waypoints stored in routes 1-19, the receiver will create any new temporary waypoints using the first three-digit number available.

TracBack Navigation



The TracBack feature will navigate your track log back to the oldest point in the receiver's memory.

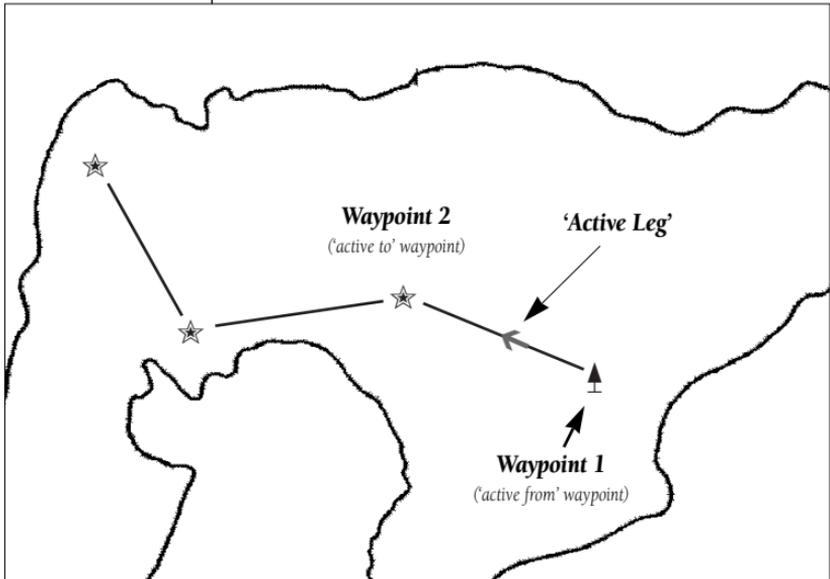


The track log will be divided into segments with temporary waypoints to create a route back to the beginning of the track log.

Creating and Using Navigation Routes

The last form of navigating to a destination with the GPSCOM 170 is by creating a user-defined route. The route navigation feature lets you plan and navigate a course from one place to another using a set of pre-defined waypoints. Routes are often used when it's not practical, safe or possible to navigate a direct course to a particular destination (e.g., through a body of water or impassable terrain).

Routes are broken down and navigated in smaller segments called 'legs'. The waypoint you are going to in a leg is called the 'active to' waypoint, and the waypoint immediately behind you is called the 'active from' waypoint. The line between the 'active to' and the 'active from' waypoint is called the 'active leg'.



Whenever you activate a route with the GPSCOM 170, it will automatically select the route leg closest to your position as the active leg. As you pass each waypoint in the route, the receiver will automatically sequence and select the next waypoint as the 'active to' waypoint.

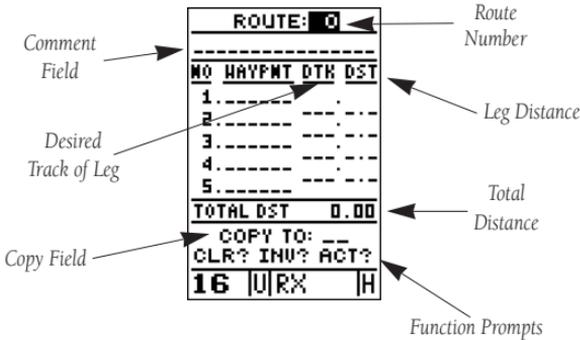
Route Navigation

Routes Definition Page

The GPSCOM 170 lets you create and store up to 20 routes of 30 waypoints each. Routes are created, copied and edited through the route definition page, which is accessed through the menu page.

To select the route definition page:

1. Press **PAGE** until the menu page appears.
2. Highlight the 'ROUTES' option.
3. Press **ENTER** to display the route definition page.
4. To return to the menu page, press **PAGE**.



The route number field is displayed at the top of the page, with a 16-character user comment below. If no user comment is entered, the field will display the first and last waypoint in the route. The waypoint list in the middle of the page accepts up to 30 waypoints for each route, with fields for desired track and distance between legs. The total distance of the route is indicated below the waypoint list.

The bottom of the route definition page features several function fields which let you copy, clear, invert or activate the displayed route. Routes 1-19 are used as storage routes, with route 0 always serving as the active route you are navigating. If you want to save a route currently in route 0, be sure to copy it to another open route, as it will be overwritten by the next route activation.



If you're heading out without a planned route, the mark function can be used to quickly create a route back to your starting point.

Create a series of waypoints along the way with the mark key and save them to an open route from the mark position page. When you're ready to head back, simply activate the route you created in inverted order.

Route Navigation

ROUTE: 5			
NO	WAYPNT	DTR	DST
1.	DOCK__	.	.
2.	-----	---	---
3.	-----	---	---
4.	-----	---	---
5.	-----	---	---
TOTAL DST		0.00	
COPY TO: __			
CLR? INU? ACT?			
16	URX		H

Enter each waypoint in the order you would like to navigate them. If you enter a waypoint not stored in memory, you'll need to define the position on the waypoint definition page.

ROUTE: 1			
DOCK TO SWIN			
NO	WAYPNT	DTR	DST
1.	DOCK	031	1.6
2.	REEF	026	1.5
3.	SWIN		
4.	-----	---	---
5.	-----	---	---
TOTAL DST		3.09	
COPY TO: 0?			
CLR? INU? ACT?			
16	URX		H

To copy a route, select an open storage route and press the ENTER key. If you select a route that is already used, you'll be alerted with a 'Route Full' message.

To create a route from the route definition page:

1. Highlight the route number field and press **ENTER**.
2. Enter a route number and press **ENTER** to confirm.
3. Press **ENTER** to begin entry of a route comment. (Note that the default [first and last waypoint] comment will only appear if the comment field is blank.)
4. Enter your comment and press **ENTER**.
5. Highlight the No. 1 waypoint field and press **ENTER**.
6. Enter the first waypoint of your route and press **ENTER**.
7. Continue entering the rest of your waypoints in order, using the **ENTER** key to start and confirm each field entry. The list will automatically scroll down as needed.
8. After you have entered all your waypoints, press **PAGE**.

Copying and Clearing Routes

The route definition page is also used to copy a route to another route number. This feature is useful when you make changes to the active (or TracBack) route and want to save the route for future use.

To copy a route:

1. Highlight the route number field and press **ENTER**.
2. Enter the route number to be copied and press **ENTER**.
3. Highlight the 'COPY TO' field and press **ENTER**.
4. Scroll through the available routes and select a destination route number. Only open routes will be available as choices. Press **ENTER** to copy the route.
5. Press **PAGE** to return to the menu page.

To clear a route from memory:

1. Highlight the route number field and press **ENTER**.
2. Enter the route number and press **ENTER**.
3. Select the 'CLR?' prompt and press **ENTER**.

Route Navigation

Clearing Routes (con't.)

The clear route warning will appear, asking you to confirm that you want to remove all waypoints from the route.

1. Highlight the 'Yes?' field.
2. Press **ENTER** to confirm your action.
3. Press **PAGE** to return to the menu page.

Activating And Inverting Routes

After a route has been entered, it can be activated in its defined sequence or inverted from the route definition page. The process of activating or inverting a stored route takes a storage route (routes 1-19) and copies it into the active route (route 0) for navigation. The storage route is now no longer needed and will be retained in its original format under its existing route number.

This system allows you to have an active route that you may edit during navigation and save as an entirely new route from the original. You will have to copy the active route to an unused storage route to save it, since new route or TracBack activation overwrites route 0.

To activate a route:

1. Select the route definition page and press **ENTER** to activate the route number field.
2. Enter the route number to be activated and press **ENTER**.
3. Move the field highlight to the 'ACT?' prompt and press **ENTER**.

Inverting a route allows you to navigate route legs in inverted order without editing the original route.

To activate a route in inverted order:

1. Follow the steps above, but select the 'INV?' prompt and press **ENTER**.

CLEAR ROUTE		
WARNING!		
all waypoints will be removed from this route		
Are you sure Yes? or No?		
16	U R X	H

Clearing a route only removes the waypoints from the route selected. The waypoints used will remain in the receiver's memory.

ROUTE: 1		
DOCK TO SWIH		
NO	WAYPNT	DTH DST
1.	DOCK	031' 1.6
2.	REEF	026' 1.5
3.	SWIH	---
4.	-----	---
5.	-----	---
TOTAL DST		3.09
COPY TO: --		
CLR? INV? ACT?		
16	U R X	H

To activate a route, highlight the 'ACT?' prompt and press ENTER.

Route Navigation

ACTIVE ROUTE		
DOCK TO SWIM		
WAYPNT	ETE	DST
DOCK	---	---
REEF	---	---
SWIM	---	1.10
---	---	---
---	---	---
---	---	---
CLEAR? INVERT?		
16	U RX	H

Active Route Page

Whenever you have an active route, the active route page will appear in the main page sequence after the compass/highway page.

ROUTE: 1			
DOCK TO SWIM			
NO	WAYPNT	DTK	DST
1.	DOCK	---	---
2.	REEF	031	1.6
3.	SWIM	026	1.5
4.	---	---	---
5.	---	---	---
TOTAL DST			3.09
COPY TO: --			
CLR? INV? ACT?			
16	U RX	H	

To edit or review a route waypoint from the active route page, highlight the desired waypoint and press ENTER.

Active Route Page

Once a route has been activated, the active route page will appear, displaying the waypoint sequence of your route with the estimated time enroute (ETE) at your present speed and distance to each waypoint. As long as you are navigating an active route, the active route page will become part of the main page sequence of the unit.

The active route page will also allow you to change the ETE field to display desired track (DTK) or estimated time of arrival (ETA) for each leg. In addition, you can also clear or invert the active route.

To display DTK or ETA for each leg:

1. Highlight the estimated time enroute (ETE) field and press **ENTER**.
2. Use the up or down arrow keys to select 'DTK' or 'ETA' and press **ENTER**.

The active route page also allows you to clear (stop navigating) or invert the active route without using the route definition page.

To invert a route from the active route page:

1. Move the field highlight to the 'INVERT?' prompt.
2. Press **ENTER** to invert the route.

To clear the active route from the active route page and stop route navigation:

1. Select the 'CLEAR?' prompt.
2. Press **ENTER** to clear the active route.

Editing Routes

Once a route has been created and stored, it can be edited at any time, even if it is the active route.

To edit a route from the active route page or the route definition page:

1. Select the waypoint you want to edit and press **ENTER**.

Route Navigation

Editing Routes (con't.)

An on-screen menu of editing choices will appear, with options for reviewing, inserting, deleting or changing the waypoint field highlighted. Use the up and down arrow keys to select among the editing choices.

Once you've selected a waypoint from the route list, choose a menu function:

1. To review the definition page for the waypoint, highlight the 'REVIEW?' prompt and press **ENTER**.
2. To add a new waypoint that precedes the selected waypoint, highlight the 'INSERT?' prompt and press **ENTER**.
3. To remove the selected waypoint, highlight the 'REMOVE?' prompt and press **ENTER**.
4. To replace the selected waypoint with a new waypoint, highlight the 'CHANGE?' prompt and press **ENTER**.

Use the route waypoint editing instructions described earlier for creating a route to complete your changes. If you are editing the active route (route 0), copy your new route version to an empty route to save it, because the active route will be overwritten by a new route activation.

If you add, delete or change the first or last waypoint of a route, the default comment (first and last waypoint) will automatically be updated after your changes.

On-Route GOTOs

At the beginning of this section, we mentioned that the GPSCOM 170 will automatically select the route leg closest to your position as the active leg. This will give you steering guidance to the desired track of the active leg. If you would prefer to steer directly to a route waypoint, you can perform an 'on-route GOTO' from the active route page.

1. Highlight the desired route waypoint and press **GOTO**.
2. Once the GOTO waypoint page appears, press **ENTER** to confirm the on-route GOTO waypoint.

Note that after you reach the on-route GOTO waypoint, the GPSCOM 170 will automatically resume navigating the rest of the route in sequence.

ACTIVE ROUTE		
DOCK TO SWIM		
WAYPT	DEF	ACT
DOCK	REVIEW?	
REEF	INSERT?	
SWIM	REMOVE?	
	CHANGE?	

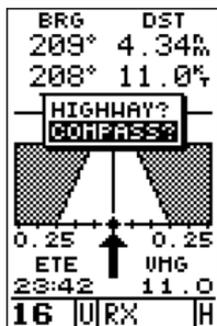
CLEAR? INVERT?		
16	U/RX	H

Use the on-screen menu to select the desired editing function.

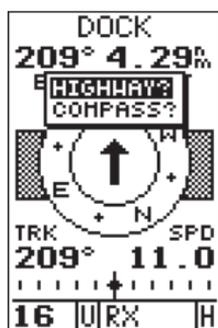
WAYPOINT LIST		
243	EMPTY	7USED
RO1	DOCK	
RO1	REEF	
RO1	SWIM	
	T001	
	T002	
	T003	
	T004	
DEL ALL WPTS?		
16	U/RX	H

You can skip ahead to any route waypoint by highlighting the desired waypoint and pressing the GOTO key.

Navigation Guidance Pages



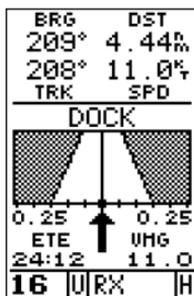
To switch the navigation page to the compass page, press ENTER twice.



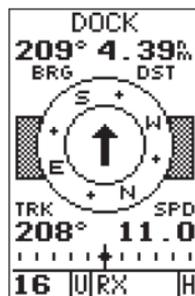
To switch the navigation page to the highway presentation, press ENTER twice.

Selecting a User-Defined Navigation Page

Once you've selected a GOTO destination or activated a MOB or route, the GPSCOM 170 will provide graphic steering guidance to the destination with one of two navigation pages:



Highway Page



Compass Page

- The highway page (the default navigation page) provides a graphic highway that shows your movement relative to the desired course, with an emphasis on your crosstrack error, (the distance and direction you are off course.) The highway page is well suited for boating and other activities with higher speeds and straight-line courses to a destination.
- The compass page provides a directional pointer to the destination, with a rotating compass graphic to display your direction of travel. The compass page is ideal for activities like trawling or entering a harbor, and provides better steering guidance for slow-speed (e.g., walking) travel with many directional changes.

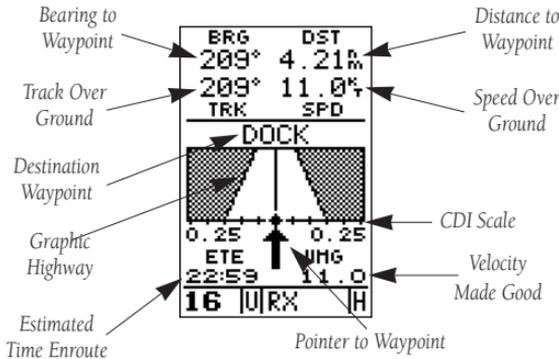
Both pages provide a digital display of the bearing and distance to the destination, your current speed and track over the ground, and course deviation indicator (CDI). You can select the desired navigation page at any time.

To select the compass or highway page:

1. Press **PAGE** until the current navigation page appears and press **ENTER**. An on-screen box will appear, with the navigation page not currently in use highlighted as the default.
2. Press **ENTER** to switch the navigation screen.

Using the Highway Page

The highway page also provides graphic steering guidance to a destination, with a greater emphasis on the straight-line desired course and the distance and direction you are off course. The bearing and distance to a waypoint, along with your current track and speed are displayed at the top of the screen, with your estimated time enroute (ETE) and velocity made good (VMG, or the rate you are closing in on your destination) at the bottom.

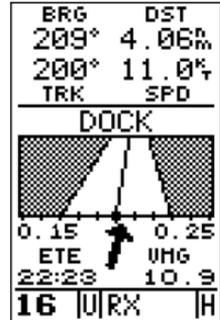


As you head toward your destination, the middle section of the screen provides visual guidance to your waypoint on a moving graphic 'highway'. The moving arrow just below the course deviation scale always points to your selected waypoint relative to the direction you are moving.

Your present position is represented by the square in the center of the course deviation scale. The line down the middle of the highway represents your desired track. As you navigate toward a waypoint, the highway will actually move, indicating the direction you're off course, relative to the position diamond on the CDI scale. To stay on course, simply steer toward the center of the highway.

If you do get off the desired course by more than 1/5th of the selected CDI range, the exact distance you are off course will be displayed where the CDI scale setting normally appears. If you get too far off course (the highway has disappeared), a message box will appear to indicate what course to steer to get back on course.

Highway Page

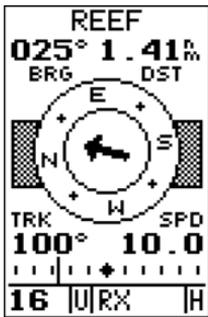


In this example, the highway page indicates that you are off course to the left. Steer right to get back on course. Notice the emphasis of the highway page is on the desired course.

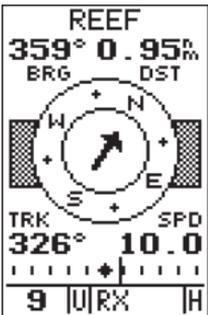


If you get too far off course, a message box will appear to indicate what course to steer to get back on course most efficiently.

Compass Page



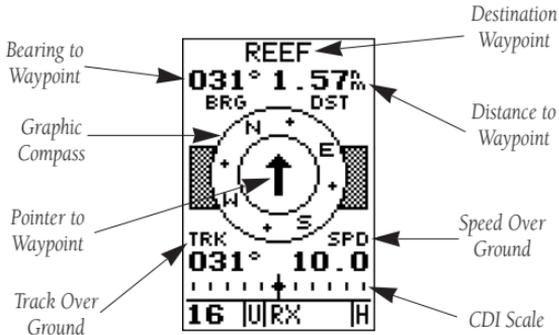
In this example, the compass page indicates that you are traveling in a easterly (100°) direction and the destination waypoint is northeast (25°) of your current direction of travel.



In this example, the compass page indicates that you are traveling in a westerly (326°) direction and the destination waypoint is slightly north (359°) of your current direction of travel.

Using the Compass Page

The compass page provides graphic steering guidance to a destination waypoint. The bearing (BRG) and distance (DST) to the waypoint are displayed at the top of the page, right below the destination waypoint field. The distance displayed is always the straight-line distance from your present position to the destination waypoint. The bearing indicates the exact compass heading from you to the destination.

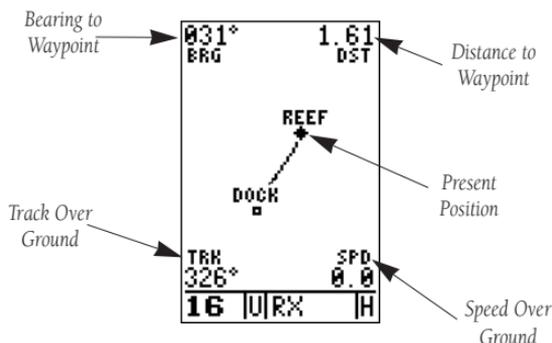


The middle of the page features a rotating 'compass' that shows your current cardinal heading while you're moving (track up), with a pointer arrow in the center to indicate the direction of the destination relative to the direction you are moving. The compass rose and pointer arrow combine to show current direction and current destination at a glance.

The bottom of the compass page displays your current track (TRK) and speed (SPD) over the ground, while the CDI (course deviation indicator) scale shows how far you are off course. The diamond in the center of the CDI scale represents your present position, while the d-bar (the moving vertical line on the scale) indicates the direction and distance you are off the desired straight-line course.

To stay on course, steer toward the d-bar until it is centered on the position diamond. The default setting of the CDI scale is +/- 0.25 miles, with each mark representing 0.05 miles of course deviation. If you do get off course by more than the selected scale, an arrow prompt will appear at the end of the scale to indicate the direction you are off course. When you are one minute away from the destination you will be alerted by a flashing on-screen message box.

Moving Map Page

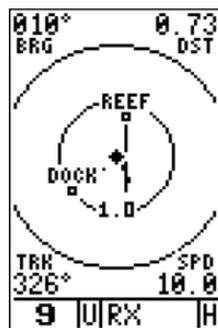


The GPSCOM 170 features a powerful real-time moving map that can do much more than just plot your course and route. The map page also provides you with a target cursor that will let you pan ahead to nearby waypoints, determine the distance and bearing to any map position, and mark new waypoints while you navigate.

The GPSCOM 170 also features dedicated zoom keys for instant zooming. The map portion of the page displays your present position as a diamond icon, with your track and/or route displayed as small points. Nearby waypoints are represented as squares, with the waypoint name listed. You may select which features are shown through the map setup submenu page (see pages 54).

The four corners of the map page are used to display various navigation data, including the bearing and distance to a destination waypoint and your current track and speed over the ground. The two fields at the top corners of the map show your bearing and distance to one of three selectable destinations: an active destination waypoint; a highlighted on-screen waypoint; or the panning target crosshair. If you are not navigating to a waypoint or using the panning function, the top data fields will not be displayed. Your current track and speed are shown at the bottom corners of the display.

Moving Map Page

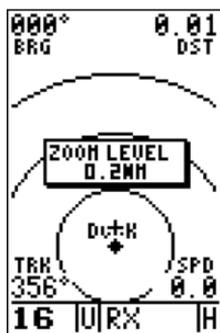


Range Rings

The GPSCOM 170 has on-screen range rings to help you estimate distances relative to your present position. The value of each ring is determined by the current zoom scale, and is equal to 1/5 of the selected scale.

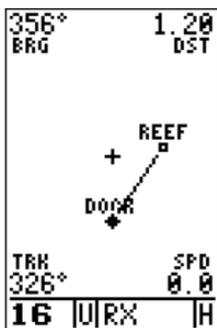
To turn the range rings display on or off (the default setting is off), see the map setup section instructions on page 54.

Moving Map Page



Selecting Map Scales

To change the map scale, press the zoom field UP and DOWN keys.



Panning Function

During panning mode, an on-screen crosshair will appear. Your present position will remain as a diamond icon, with the range and bearing to the crosshair displayed in the top corners of the map.

Zooming and Panning

There are three main functions you can perform from the map page— zooming, panning, and pointing. The moving map has 12 map scales (from 0.2 to 320 miles, or 0.5 to 600 km.) which are selected using the IN and OUT zoom keys. These ranges are measured vertically.

To use the zoom keys:

1. From the map page, press either the IN or OUT zoom keys.
2. To see the current map scale, press and hold either button down. A pop-up window will display the current scale.

The second function on the map page is the pan function, which allows you to move the map with the keypad in order to view areas outside the current map.

To activate the pan function:

1. Use the keypad to move the map in any direction, including diagonally.

As you begin to move the map, a crosshair will appear. This crosshair will now serve as a target marker for the moving map. The distance and bearing to a destination will now be replaced by the distance and bearing from your present position to the target crosshair.

As you pan around the map, you'll notice that the target crosshair will 'snap' to on-screen waypoints and highlight the waypoint name. Once a waypoint name is highlighted, you can review its waypoint definition page or execute a GOTO function right from the map page.

To review the definition page for a waypoint highlighted on the map page:

1. Press **ENTER**.

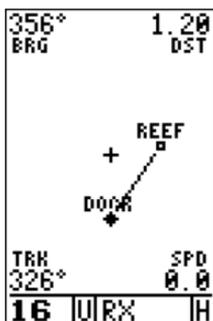
To GOTO a waypoint highlighted on the map page:

1. Press **GOTO**.
2. Press **ENTER** to confirm the GOTO waypoint page.

To stop the panning function:

1. Press **QUIT**.

Using the Cursor to Mark and GOTO Waypoints



During panning, the crosshair represents a target position right on the moving map, with the range and bearing to the target displayed at the top corners of the screen. You can also use the target crosshair to mark a new waypoint position or as a GOTO destination right from the map field.

To mark the target crosshair position as a new waypoint:

1. Press **MEM** to capture the position.
2. Enter a new name and route number if you wish.
3. Press **ENTER** to save the waypoint and return to the map page.

You can also use the target crosshair as an instant GOTO destination. Similar to the MOB mode, this function will mark and instantly set a course for a new waypoint called 'MAP'.

To GOTO the target crosshair:

1. Press **GOTO** to capture the position.
2. Press **ENTER** to confirm the MAP GOTO.

If you want to save the MAP waypoint, be sure to rename it, as it will be overwritten the next time a map GOTO is executed.

Moving Map Page

MARK POSITION	
Waypoint:	
001	
N 39°01.194'	
W 095°00.000'	
Add to route number: --	
SAVE	
16 U R X H	

Marking a Waypoint

To mark a new waypoint with the crosshair, simply pan to the desired position and press the MARK key.

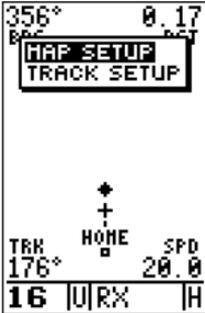
WAYPOINT LIST	
248 EMPTY	3 USED
DOCK	
MAP	
REEF	

DEL ALL WPTS?	
16 U R X H	

MAP GOTO

The crosshair may also be used to define a GOTO destination by panning to the desired position and pressing the GOTO key. If you want to save the MAP waypoint, be sure to rename it.

Map Setup Page



Accessing the map setup page from the moving map page.



Selecting 'Track Up' map orientation.

Accessing the Map Setup and Track Setup Windows

You can access two additional pages—the map setup page and the track setup page—by pressing **ENTER** while on the map page. The map setup and track setup window will appear, ready for you to select one.

To select map setup or track setup:

1. Highlight either field, and press **ENTER**.

Map Setup Page and Orientation

The map setup page lets you select map orientation and specify what items are displayed. The map may be oriented to 'North Up,' 'Track Up' (the direction of current travel), or 'DTK Up' (desired track up, or the direction of travel to stay on course). The default setting is track up.

To change the map orientation:

1. Highlight the 'ORIENTATION' field, and press **ENTER**. Select the desired orientation, and press **ENTER**.

The rest of the map setup page lets you specify what items are displayed or plotted on the map page by selecting 'YES' or 'NO' in the appropriate field.

- 'RINGS'—displays the three present position range rings on the map.
- 'ROUTE'—plots the straight-leg lines between waypoints of an active route and displays all route waypoint names.
- 'NEAREST'—shows the nine nearest waypoints to your present position (not to the target cursor) on the map.
- 'NAMES'—displays the waypoint name for the nine nearest waypoints.
- 'TRACK LOG'—displays the number of track points up to a maximum of 950.

To turn a map item on or off:

1. Highlight 'YES' or 'NO' for the specific map item, and press **ENTER**.

Track Log Setup Page

The track setup page lets you manage the track log data. From this page, you can select whether to record a track log and define how it is recorded.

To turn the track log on or off:

1. Highlight the 'RECORD' field, and press **ENTER**. Select 'YES' or 'NO', and press **ENTER**.

Track Method

Track Method

The stored track method determines how often positions are stored in the track log. The default setting is automatic, which will store a track based on resolution. This setting gives you the most efficient use of track memory and provides the most accurate TracBack route.

To change the method to record points based on a specific time interval:

1. Highlight the 'CRITERIA' field, and press **ENTER**.
2. Select 'TIME INTERVAL', and press **ENTER** twice.
3. Enter a value in hours, minutes, and seconds, and press **ENTER**.

Track Log Display

The track log option sets the number of points the unit will attempt to display on the map page. The default setting of 250 points provides good resolution with minimal screen clutter. The maximum setting is 768 points. Once you've reached the maximum number of track points, the older points will be lost as new points are added. Note that adjusting the track points displayed will not affect whether the receiver records a track log or the ability to create a TracBack route.

Managing and Clearing the Track Log

The rest of the track setup window displays the percentage of available memory currently used to store track log data and function fields to clear the track log memory and activate the TracBack feature.

To clear the track log:

1. Highlight 'CLEAR LOG?', and press **ENTER**.
2. Highlight 'Yes?', and press **ENTER**.

TRACK LOG	
RECORD:	Yes
CRITERIA:	Automatic
MEMORY USED	0%
3 OF 768 PNTS	
CLEAR LOG?	TRACEBACK?
16	U R X H

The default track method setting is automatic, which will store a track based on resolution.

TRACK LOG	
RECORD:	Yes
CRITERIA:	Automatic
MEMORY USED	0%
3 OF 768 PNTS	
CLEAR LOG?	TRACEBACK?
16	U R X H

Clearing the track log.

Menu Page

MENU		
NEAREST HPTS		
WAYPOINT LIST		
WAYPOINT		
ROUTES		
DIST AND SUN		
MESSAGES		
SYSTEM SETUP		
NAV SETUP		
MAP SETUP		
TRACK LOG		
INTERFACE		
16	U/RX	H

Menu Page

To select a submenu, use the UP and DOWN keys to highlight a menu option and press ENTER.

DIST AND SUN		
FROM: DOCK		
TO: REEF		
BRG	DST	
031°	1.61%	
DATE: 22 JAN 97		
SUNRISE 09:18:15		
SUNSET 19:12:27		
AT DESTINATION		
16	U/RX	H

Dis/Sun Calculation

The unit will calculate the sunrise and sunset times of any stored waypoint or your present position. To calculate, enter the date and year and press ENTER.

Menu Page

The GPSCOM 170 menu page provides access to submenu pages that are used to select and customize operation and navigation setup. The 11 submenus are divided into categories by function. The waypoint and route management submenus are discussed in their own respective sections. We'll now address the rest of the submenus in the order they appear on the menu page.

To select a submenu page from the menu page:

1. Highlight the submenu page you want to view and press **ENTER** to display the submenu page.
2. To return to the menu page, press **QUIT**.

Distance and Sun Calculations

The distance and sun calculation page will give you the distance and bearing between any two waypoints and will calculate the sunrise and sunset (in local time) at a destination waypoint for a particular date.

To perform a distance and sun calculation:

1. Highlight the 'from' field and enter the desired waypoint. Press **ENTER** to move to the next field.
2. Highlight the 'to' field and enter the destination waypoint. Press **ENTER** to calculate the range and bearing to the destination waypoint.
3. Highlight the 'date' field and enter the date for your destination. Press **ENTER** to display the sun information.

Message Page

The message page displays all current messages in the GPSCOM 170. There are two types of messages: temporary alerts (eg., approaching a waypoint) and condition alerts (eg., battery power is low). All messages are initially indicated by a flashing on-screen box. After a temporary alert has been viewed, it is cleared. Condition alerts are displayed on the message page until the condition is resolved. See Appendix E for a complete list of messages.

To view the message page:

1. Highlight the 'MESSAGES' field and press **ENTER**.

System Setup

System Setup

The first setup page is the system setup page, which is used to select the operating mode, time offset and screen preferences. The GPSCOM 170 has three operating modes:

- **GPS Off?** disables all of the unit's GPS functions which will conserve battery power.
- **GPS On** enables all of the unit's GPS functions, making it a fully operational unit.
- **Simulator?** allows you to operate the unit without acquiring satellites, and is ideal for practicing or entering waypoints and routes while at home.

To select an operating mode:

1. Highlight the 'MODE' field and press **ENTER**.
2. Use the arrow keypad to select a mode and press **ENTER**.

Date and Time Setup

The date and time field is located directly below the mode field. Because the time shown is UTC time, you will need to enter a time offset to display the correct local time for your area. To determine the time offset for your area, note your position and refer to the chart in Appendix G.

To enter the time offset:

1. Highlight the 'OFFSET' field and press **ENTER**.
2. Enter the time offset and press **ENTER**. Remember to select a positive or negative indicator for your offset.

SYSTEM SETUP		
MODE:	Simulator	
DATE	22 JAN 97	
TIME	13:23:16	
OFFSET:	-04:16	
HOURS:	24	
CONTRAST:	████████	
LIGHT:	15 SEC	
TO:	MSG, KEY	
16	U/RX	H

System Setup Page

Select simulator mode to practice navigating at home.

SYSTEM SETUP		
MODE:	Simulator	
DATE	22 JAN 97	
TIME	13:23:48	
OFFSET:	+00:16	
HOURS:	24	
CONTRAST:	████████	
LIGHT:	15 SEC	
TO:	MSG, KEY	
16	U/RX	H

Time Offset

To display the correct local time, you must enter the appropriate offset from the chart at the end of Appendix G.

System Setup

SYSTEM SETUP		
MODE:	Simulator	
DATE	22 JAN 97	
TIME	05:56:11pm	
OFFSET:	+00:16	
HOURS:	12	
CONTRAST:	████████	
LIGHT:	15 SEC	
tone:	MSG, KEY	
16	U/RX	H

12/24 Hour Clock

To display the time in AM/PM format, select the 12 hour option from the 'hours' field.

SYSTEM SETUP		
MODE:	Simulator	
DATE	22 JAN 97	
TIME	17:56:30	
OFFSET:	+00:16	
HOURS:	24	
CONTRAST:	████████	
LIGHT:	15 SEC	
tone:	MSG, KEY	
16	U/RX	H

Screen Backlighting

To get the longest battery life, keep the screen backlighting at the default 15-second option.

Time Format

The time display shown on the system setup and position pages may be set to display the time in a 12- or 24-hour format.

To select the time format:

1. Highlight the 'HOURS' field and press **ENTER**. Select 12- or 24-hour display, and press **ENTER** to confirm.

Screen Contrast

The GPSCOM 170 features adjustable screen contrast and is controlled by using an on-screen bar scale. The screen contrast can also be adjusted from the satellite status page (see page 20).

To set the screen contrast:

1. Move the field highlight to the 'CONTRAST' field and press **ENTER**. Use left and right arrow keys to adjust the bar scale for the desired contrast and press **ENTER**.

Screen Backlighting

The screen backlight timer is adjustable for 0, 15, 30, 60, 120 and 240 seconds. The '0' setting will keep backlighting on continuously. Whenever backlighting is on, a bulb icon will appear on the status page.

To set the backlight timer:

1. Highlight the 'LIGHT' field and press **ENTER**.
2. Use the up and down arrow keys to toggle through and select the desired setting, and press **ENTER**.
3. To turn lighting on and off, press the backlight button.

Tone Setting

You may choose from three settings for audible tone: messages only, messages and keystrokes, or no tone at all. Tone volume is controlled by the volume knob.

To specify a tone setting:

1. Highlight the 'TONE' field and press **ENTER**. Use the up and down arrow keys to select the desired tone and press **ENTER**.

Navigation Setup

Navigation Setup

The navigation setup page is used to select units of measurement for position formats, map datums, CDI scale, as well as distance, speed and heading information.

Position Formats

The default position setting for the GPSCOM 170 is latitude and longitude in degrees and minutes (hddd°mm.mmm'). You may also select degrees, minutes and seconds (hddd°mm'ss.s"); degrees only (hddd.ddddd°); UTM/UPS coordinates; or British, German, Irish, Maidenhead, Swedish, Swiss or Taiwan grid formats.

To select a position format:

1. Highlight 'POSITION FRMT' and press **ENTER**. Use the up and down arrow keys to select the desired setting. Confirm the setting by pressing **ENTER**.

Map Datums

The map datum field is located just below the position format field, and comes with a WGS 84 default setting. Although 104 total map datums are available for use (see the map datum listing in Appendix F), you should only change the datum if you are using maps or charts that specify a different datum than WGS 84.

To select a map datum:

1. Highlight the 'MAP DATUM' field and press **ENTER**.
2. Use the up and down arrow keys to toggle through and select the desired setting. Confirm the setting by pressing **ENTER**.

CDI Scale Setup

The course deviation indicator (CDI) scale definition field lets you select the +/- range of the CDI bar scale. Three scales are available: +/- 0.25, 1.25 and 5.0 miles or kilometers, with 0.25 being the default setting.

To enter a CDI scale setting:

1. Highlight the 'CDI SCALE' field and press **ENTER**. Use the up and down arrow keys to select the desired setting. Press **ENTER** to confirm the selection.

NAV SETUP		
POSITION FRMT:		
hddd°mm.mmm'		
MAP DATUM:		
WGS 84		
CDI SCALE:		
±0.25		
UNITS: NAUTICAL		
HEADING:		
AUTO MAG E004		
16	U RX	H

NAV Setup Page

The position format may be set to display your position in various lat/lon or grid formats.

NAV SETUP		
POSITION FRMT:		
hddd°mm.mmm'		
MAP DATUM:		
WGS 84		
CDI SCALE:		
±0.25		
UNITS: NAUTICAL		
HEADING:		
AUTO MAG E004		
16	U RX	H

Map Datum

The GPSCOM 170's default map datum is WGS 84.

WARNING: Using the wrong map datum can seriously affect the accuracy of your GPS receiver.

Menu Page Options

NAV SETUP	
POSITION FRMT:	hddd°mm. mmm'
MAP DATUM:	WGS 84
CDI SCALE:	±0.25
UNITS: NAUTICAL	
HEADING:	<input type="checkbox"/> USER MAG: E000
16	 URX H

Magnetic Heading

To enter a user-defined magnetic variation, select the 'User Mag' option and enter the desired direction and value.

MAP SETUP	
ORIENTATION:	<input checked="" type="checkbox"/> North Up
PLOTTED ITEMS	
RINGS:	No
ROUTE:	Yes
NEAREST:	Yes
NAMES:	Yes
TRACK LOG:	250
16	 URX H

Map Setup Page

The map orientation can be set to track up, north up, or desired track up. The plotted items options let you define what appears on the map display.

Units of Measure

The GPSCOM 170 lets you select nautical (default), statute or metric units of measure for all speed and distance fields.

To change the unit of measure:

1. Highlight the 'units' field and press **ENTER**.
2. Use the up and down arrow keys to select the desired unit of measure. Press **ENTER** to confirm the selection.

Magnetic Heading Reference

The GPSCOM 170's heading information can be displayed referencing magnetic north (auto or user-defined), true north or calculated grid headings. The default setting is automatic magnetic north, which is suitable for most applications.

To select a heading reference:

1. Highlight the 'HEADING' field and press **ENTER**. Select the desired heading preference.
2. Press **ENTER** to confirm the selection.

To enter a user-defined magnetic heading:

1. Select the 'USER MAG' option and press **ENTER**.
2. Use the up and down arrow keys to enter the degrees and direction of magnetic variation.
3. Press **ENTER** to confirm the magnetic variation value.

Map Setup and Orientation

The map setup page can be accessed from the main menu page and the moving map page. See page 54 for details on the map setup and orientation.

TracBack Function

The next listing on the main menu page is the track log, which can be also be accessed from the moving map page. See page 40 for details on the trackback function.

Interface Setup

Interface Setup

The interface setup page lets you specify the formats for connecting external NMEA devices, a DGPS receiver, or a personal computer. There are six options:

- **'GRMN/GRMN'** is the proprietary interface that allows you to exchange data such as waypoints, routes, and track logs between GARMIN units and a GARMIN PC software kit.
- **'NONE/NMEA?'** provides navigation information to a compatible NMEA device such as an autopilot or radar. NMEA 0180, 0182, 0183 v. 1.5 and 0183 v. 2.0 output options are available.
- **'NMEA/NMEA?'** allows input from a NMEA compatible device, with selectable NMEA output.
- **'RTCM/NMEA?'** allows DGPS beacon receiver input and also provides selectable NMEA output.
- **'RTCM/NONE?'** allows DGPS beacon receiver input without output capabilities.
- **'NONE/NONE?'** provides no interfacing capabilities.

To select an I/O format:

1. Highlight the I/O field and press **ENTER**. Use the up and down arrow keys to toggle through and select the desired setting, and press **ENTER**.

To select a transfer option:

1. Highlight the 'HOST' field and press **ENTER**. Use the up and down arrow keys to select a setting and press **ENTER**.

To disable all interfacing capabilities, select 'NONE/NONE'. If you want to output NMEA data to compatible external devices without any differential input capability, select 'NONE/NMEA'. Once a NMEA output setting has been selected (with or without RTCM input), the NMEA field will become highlighted. NMEA formats 0180, 0182 or 0183 (1.5 or 2.0) are available.

To select a NMEA format:

1. Press **ENTER** to begin a NMEA selection. Use the up and down arrow keys to select a format, and press **ENTER**.

**Interface Setup Page**

The default interface setting is the GARMIN/GARMIN option, which can be used for unit-to-unit data transfer or interfacing with a GARMIN PC Kit.

**NMEA Interface**

Once a NMEA format is selected, the baud rate will automatically be set to the proper speed.

DGPS Interface

INTERFACE	
RTCM/NMEA	
NMEA 0183 1.5	
4800 baud	
BEACON RECEIVER	
FREQ:	000.0kHz
RATE:	25bps
DIST	--NM
SNR	--dB
No Status	
16	U RX H

DGPS Interface

Once a RTCM option is selected, you must manually tune the beacon receiver from the frequency field.

MESSAGES	
No DGPS Position	
PRESS PAGE	
16	U RX H

The message page will alert you to any problems relating to DGPS operation. You may also monitor the DGPS status from the status field on the interface setup page.

DGPS Interface

The last two format settings allow the unit to accept RTCM DGPS corrections in RTCM 104 version 2.0 format. Using DGPS corrections will improve receiver accuracy to 5-10 meters, regardless of errors induced by the government's Selective Availability (SA) program. The RTCM/NONE format will allow connection to any manually-tuned beacon receiver by using the proper output interface. The baud rate is selectable from the unit.

The RTCM/NMEA selection controls the GARMIN GBR-21 differential beacon receiver. Once a RTCM setting has been selected, the unit will either automatically try to tune the last frequency and bit rate you selected or will switch to the default frequency of 304.0 kHz with a bit rate of 100 bps if no previous beacon has been tuned. You may also enter your own frequency and bit rate.

To enter a DGPS beacon frequency:

1. Highlight the 'FREQ' field, and press **ENTER**.
2. Enter the desired frequency, and press **ENTER**.
3. Highlight the 'RATE' field, and press **ENTER**.
4. Select the desired transmission rate, and press **ENTER**.

When the GPSCOM 170 is receiving DGPS corrections from the GBR-21, the 'beacon receiver' section of the I/O setup page will display the beacon frequency and signal strength, as well as the distance from the transmitter to the beacon receiver. At the bottom of the beacon receiver field, a status message will keep you informed of DGPS activity:

- A 'tuning' message will be displayed while a beacon signal is being tuned.
- Once the beacon signal has been tuned, a 'receiving' message will be displayed.
- If a beacon signal is tuned and no corrections are being received, a 'no data' message will be displayed.
- If a beacon signal cannot be tuned, a 'no status' message will be displayed.

The unit will also display one of three alert messages concerning DGPS operation through the message page:

Simulator Mode

DGPS Interface (con't.)

- **No DGPS Position**—not enough data is available to compute a DGPS position.
- **No RTCM Input**—the beacon receiver is not properly connected or the baud rates do not match.
- **RTCM Input Failed**—DGPS data was being received but has been lost.

Navigation Simulator

The simulator mode lets you practice all aspects of its operation without active satellite acquisition. You can also plan and practice trips, enter new waypoints and routes, and save them for use during normal operation. The unit does not track satellites in simulator mode. Although you can create and save waypoints and routes while using the simulator mode, never attempt to use the simulator mode for actual navigation. The simulator is activated from the system setup page, with speed and heading controlled from the position, compass or highway pages.

To activate the simulator:

1. Highlight 'SYSTEM SETUP' and press **ENTER**.
2. Highlight the 'MODE' field and press **ENTER**.
3. Use the up or down arrow keys to select 'SIMULATOR?'. Press **ENTER** to confirm.
4. Press **ENTER** to return to the menu page.

Once the simulator mode has been activated, use the position, compass or highway page to set your speed and track. You may also enter a new position if you desire (only from the position page).

To enter track, speed, and position:

1. Highlight the 'TRACK' field and press **ENTER**. Enter a track heading and press **ENTER**.
2. Highlight the 'SPEED' field and press **ENTER**.
3. Enter a speed and press **ENTER**. Highlight the 'POSITION' field (position page only) and press **ENTER**.
4. Enter a position and press **ENTER**.

SYSTEM SETUP	
MODE:	Simulator
DATE	22 JAN 97
TIME	18:02:16
OFFSET:	+00:16
HOURS:	24
CONTRAST:	████████
LIGHT:	15 SEC
TOUR:	MSG, KEY
	16 U/RX H

Select the simulator mode from the operation mode options and press ENTER. You may return to normal operation by changing the operation mode or turning the unit off.

300 NW 330 345	
TRACK	SPEED
326°	00.0%
TRIP	ALT
000.0%	181%
N 39°00.000'	
W095°00.000'	
18:02:39	
16 U/RX H	

Speed, Track & Position

Once simulator mode is selected, speed and track values may be entered on the position or navigation pages. A simulated position may also be entered on the position page.

Initializing The Receiver



Welcome Page

Initializing the GPSCOM 170 for First-Time Use

The first time you power up your new GPSCOM 170 is an important step in getting the best possible GPS performance. ***The receiver must be given an opportunity to collect satellite almanac data and establish its present position.*** This initialization process takes approximately 3 to 5 minutes and is only necessary for first-time operation, after memory loss, or when the receiver has been moved more than 500 miles from the last calculated position with the power off. Once your GPSCOM 170 has been properly initialized, you should acquire satellites and obtain a position quickly each time you power up.

Your GPSCOM 170 is shipped in the AutoLocate mode, which is designed to let the receiver “find itself” without using its last known position (you don’t need to worry about what lat/lon is currently displayed on the position page, as the unit is not using that information to calculate your present position).

To power up your unit for first time use:

1. Position the internal GPS antenna so it has the best possible view of the sky (the internal patch antenna is located just above the keypad, marked by the embossed globe).
2. Turn the unit on by rotating the volume control clockwise.
3. Rotate the squelch control clockwise until receiver noise disappears.
4. Remain in the same location until the GPSCOM 170 has calculated a position. (You’ll know you have a fix when a 2D or 3D status appears in the status field or the receiver automatically transitions to the position page. If you encounter difficulty acquiring satellite signals, see page 66.)

Initializing The Receiver

EZinit

After a few seconds, the satellite status page will appear with the EZinit prompt ready for you to select one of two initialization methods:

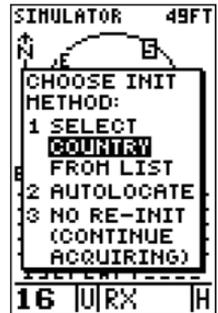
- **Select Country**— allows you to initialize the receiver by selecting your present position from a list of countries in the GPSCOM 190's internal database. This feature provides a position fix in 3-5 minutes.
- **AutoLocate**— allows the GPSCOM 190 to initialize itself and calculate a position fix without knowing your present position. This feature provides a position fix in approximately 5 minutes.

If the EZinit prompt has not automatically appeared on the status page, press **ENTER**.

If you've already initialized the GPSCOM 170 and the EZinit prompt appears, highlight the 'NO RE-INIT' selection with the arrow keypad and press **ENTER**. The EZinit prompt may appear if you've had the unit on in normal mode while indoors, or if the antenna is shaded while acquiring satellites.

To initialize the receiver:

1. Use the up or down arrow keys to highlight the 'COUNTRY' option and press **ENTER**.
2. Use the down key to scroll through the country listings until the country where you are presently located appears.
3. Use the up or down arrow key to highlight the country/state/region you're in. If the country you're in is not listed, select another country within 500 miles of your present position.
4. Press **ENTER** to finish.

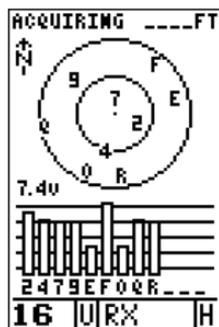


The EZinit prompt will automatically appear if the receiver needs to be initialized. The prompt may also appear during normal use if the antenna is shaded or the unit is indoors.



Use the arrow keypad to highlight the country and region or state (if necessary) of your present position from the list and press **ENTER**. If the country is not listed, select the closest country instead.

Initializing The Receiver



Once satellites have been found, hollow signal strength bars will be displayed while the data is being collected. The signal strength bars can be used to help determine if satellites are being shaded.

Acquiring Satellites

The GPSCOM 170 will now begin searching for the appropriate satellites for your position and should acquire a fix within three to five minutes. You can verify getting a position fix by watching the status page transition to the position page (provided you haven't pressed any other keys) or by looking for a '2D NAV' or '3D NAV' status at the top-left corner of the status page.

Troubleshooting

If you have trouble initializing the receiver or getting a position fix, check the following:

- **Does the antenna have a clear view of the sky?**

If there are large buildings such as hangers, metal surfaces, or other obstructions, the unit may not be receiving enough satellite signals to calculate a fix.

- **Is the right country/state selected from the EZinit list?**

Check for the correct approximate lat/lon on the position page or reselect the appropriate country from the list to restart the initialization.

- **Have you moved more than 500 miles from the last calculated position with the receiver off?**

Reinitialize the receiver, selecting the country/state of your new location from the EZinit list.

Flex Com Antenna Attachment and Removal

To remove the flex com antenna:

1. Squeeze the base of the antenna and turn counter-clockwise until the antenna disengages from the connector on the unit.
2. Pull up gently and remove.

To attach the flex com antenna:

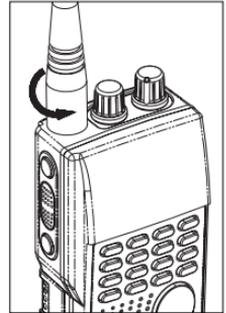
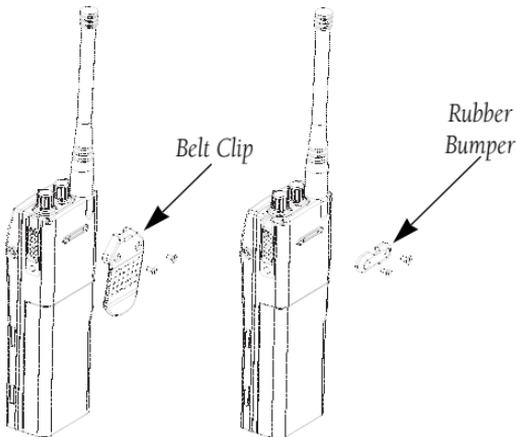
1. Place the antenna fully over the BNC connector, squeeze the base of the antenna, and turn clockwise until the antenna engages the connector.

Carrying Case

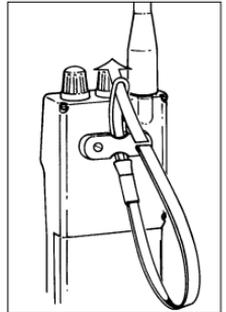
A durable nylon carrying case comes with a belt attachment on the back. A side pocket is included for easy storage of the com antenna.

Belt Clip

The GPSCOM 170 includes a sturdy belt clip so you can carry the unit with you wherever you go. To attach the clip, you will need to remove the rubber bumper from the back of the unit. Attach the clip using the two screws just removed from the bumper as shown in the figure below.



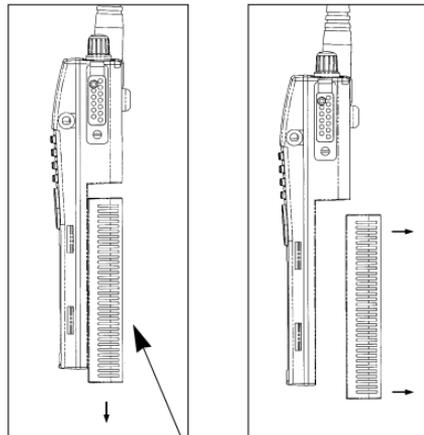
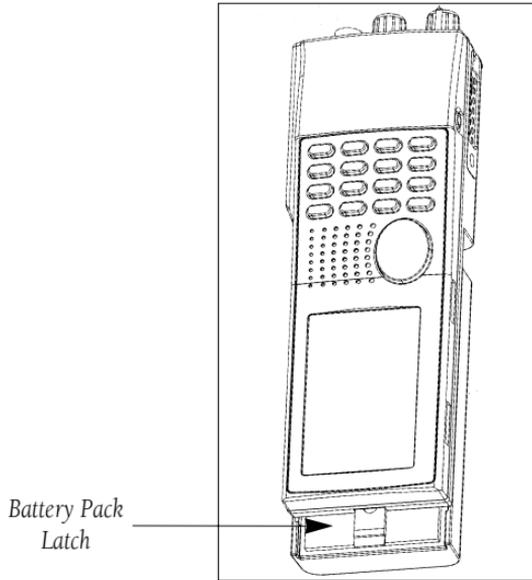
Flex com antenna attachment.



To attach the wrist strap, thread the strap through the slot in the rubber bumper or the belt clip. Next, take the solid end of the strap, insert it through the eye of at the other end, and tighten.

Battery Pack Removal**To remove the Ni-Cad battery pack:**

1. Press down on the battery pack latch, pull down on the pack and remove.



Battery Pack
Removal

Trickle Charger/AC Adapter

The trickle charger/AC adapter supplied with the GPSCOM 170 converts line voltage to the DC voltage necessary to operate the unit. The AC adapter also slowly recharges the Ni-Cad battery pack at a rate of 14 hours for a full recharge. Make sure you charge the Ni-Cad battery pack for 14 hours before using your GPSCOM 170 to ensure optimum capacity and performance. When charging the battery pack, be sure to turn the unit off to ensure a full charge. The cigarette lighter adapter will also trickle charge the battery pack only if the unit is turned on and in the receive mode (GPS or com).

To recharge the Ni-Cad battery pack:

1. Attach the connector end of the adapter to the GPSCOM 170 by sliding it into the slot on the left side of the unit (observe the keyway on the unit connector and the matching groove on the connector end).
2. Plug the other end into an electrical outlet.



Do not charge the GPSCOM 170 for more than 24 hours. Heat generated by overcharging can shorten battery life and cause battery pack component failures.

Battery Pack Handling and Storage

The Ni-Cad battery supplied with the GPSCOM 170 has exposed terminals which may be shorted if not stored properly. Don't place a loose battery pack on or near metal objects (paper clips, keys, tools, etc.) and be careful when placing battery packs in handbags, toolboxes, etc. Never immerse a battery pack in water. If the battery pack becomes wet, wipe it dry before attaching it to the unit.

Always store your GPSCOM 170 with the battery pack installed. An internal lithium battery will save almanac and waypoint data for an extended period of time, but it is designed to allow you to recharge the battery pack, not replace it. If you're storing the unit for the season, make sure the batteries are fully charged.

WARNING!

Do not dispose of a Ni-Cad battery pack in a fire or incinerator. Heat may cause battery cells to explode and/or release dangerous gases. All batteries must be recycled or disposed of properly, and cannot be disposed of by ordinary waste disposal methods. Please take the time to check with your nearest GARMIN service center for proper disposal methods and locations.

Channel List

Important!

- Channel 13: 1 W initial USA.
- Channel 15: No transmit USA or INT; 1W Canada.
- Channel 17: 1W all bands.
- Channel 20: 1W Canada.
- Channels 03A and 61A are not authorized for use by the general public in U. S. waters.

The GPSCOM 170 operates on the following VHF channels.

Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650
01A			156.050	156.050
	02	02	156.100	160.700
	03	03	156.150	160.750
03A			156.150	156.150
	04		156.200	160.800
		04A	156.200	156.200
	05		156.250	160.850
05A		05A	156.250	156.250
06	06	06	156.300	156.300
	07		156.350	160.950
07A		07A	156.350	156.350
08	08	08	156.400	156.400
09	09	09	156.450	156.450
10	10	10	156.500	156.500
11	11	11	156.550	156.550
12	12	12	156.600	156.600
13	13	13	156.650	156.650
14	14	14	156.700	156.700
15	15	15	156.750	156.750
16	16	16	156.800	156.800
17	17	17	156.850	156.850
	18		156.900	161.500
18A		18A	156.900	156.900
	19		156.950	161.550
19A		19A	156.950	156.950
20	20	20	157.000	161.600
	21		157.050	161.650
21A		21A	157.050	157.050
	22		157.100	161.700
22A		22A	157.100	157.100
	23	23	157.150	161.750
23A			157.150	157.150
24	24	24	157.200	161.800
25	25	25	157.250	161.850
26	26	26	157.300	161.900
27	27	27	156.350	161.950
28	28	28	157.400	162.000
	60	60	156.025	160.625
	61		156.075	160.675
61A			156.075	156.075
	62		156.125	160.725

Channel List

Important!

- Channel 66A: 1W Canada.
- Channel 77: 1W initial Canada and USA.
- Channels 64A, 81A, and 83A are not authorized for use by the general public in U.S. waters.

Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
		62A	156.125	156.125
	63		156.175	160.775
63A			156.175	156.175
	64	64	156.225	160.825
64A		64A	156.225	156.225
	65		156.275	160.875
65A		65A	156.275	156.275
	66		156.325	160.925
66A		66A	156.325	156.325
67	67	67	156.375	156.375
68	68	68	156.425	156.425
69	69	69	156.475	156.475
70	70	70	NO TX	156.525
71	71	71	156.575	156.575
72	72	72	156.625	156.625
73	73	73	156.675	156.675
74	74	74	156.725	156.725
77	77	77	156.875	156.875
	78		156.925	161.525
78A		78A	156.925	156.925
	79		156.975	161.575
79A		79A	156.975	156.975
	80		157.025	161.625
80A		80A	157.025	157.025
	81		157.075	161.675
81A		81A	157.075	157.075
	82		157.125	161.725
82A		82A	157.125	157.125
	83	83	157.175	161.775
83A		83A	157.175	157.175
84	84	84	157.225	161.825
85	85	85	157.275	161.875
86	86	86	157.325	161.925
87	87	87	157.375	161.975
88	88	88	157.425	162.025
88A			157.425	157.425

WX Channels - Receive Only

WX1 162.550	WX6 162.500
WX2 162.400	WX7 162.525
WX3 162.475	WX8 161.650
WX4 162.425	WX9 161.850
WX5 162.450	WX10 162.000

Specifications

The GPSCOM 170 is constructed of high-quality materials and should not require user maintenance. Should your unit ever need repair, please take it to an authorized GARMIN service center. The GPSCOM 170 has no user-serviceable parts. Never attempt any repairs yourself. To protect your GPSCOM 170, keep it in its carrying case when not in use, and never allow gasoline or other solvents to come into contact with the case. Clean the case and lens with a soft cloth and a household window cleaner.

PHYSICAL

Size:	7.1"H x 2.3"W x 1.4"D (18 x 5.8 x 3.6 cm)
Weight:	Approx 1.4 lbs. (.63Kg)
Temperature Range:	5° to 158°F (-15° to 70°C)

PERFORMANCE

GPS:	Receiver:	PhaseTrac12
	Acquisition Time:	Approx. 15 seconds (warm start) Approx. 45 seconds (cold start) Approx. 5 minutes (AutoLocate)
	Update Rate:	1/second, continuous
	Position Accuracy:	1-5 meters (16-33 ft.) with DGPS corrections* 15 meters (49 ft.) RMS**
	Velocity Accuracy:	0.1 knot RMS steady state, 99 knots max
	Dynamics:	Performs to specification to 6g's

Transceiver:	Frequency Bands:	All U.S., Canadian, and International marine channels, plus 10 weather frequencies
	Selectivity:	Adjacent channel selectivity, 65dB Spurious Image Response, 65dB
	Sensitivity (FM):	> 12 dB SINAD at .3 microvolt
	(WX):	> 12 dB SINAD at .3 microvolt

Specifications subject to change without notice.

* With optional GARMIN GBR 21 Beacon Receiver Input.

** Subject to accuracy degradation to 100m 2DRMS under the US DOD-imposed Selective Availability Program.

Transceiver Specifications (continued):

Channel Spacing:	25 kHz
Audio Power:	0.5 W into 16 ohm speaker
Audio Distortion:	< 10%
Transmitter Output:	1 watt low/5 watts high
Sidetone Audio Power:	7 vPP across 330 ohm load
Frequency Stability:	+/- 10 PPM
Duty Cycle:	No damage even if continuously keyed
Microphone:	Internal electret or optional external mic/headset
Compliance:	FCC Part 87

POWER

Source:	(1) 7.2v, 1800 mAh Ni-Cad battery pack, or 9-33 VDC external.
Battery Life:***	6 hours (low) and 4 hours (high); GPS/COM (GPS only 10 hours).
Current Consumption:	Standby - 150 mA, GPS on, Com Off. Receive - 240 mA; GPS on, Com Rx. Transmit - 2.4 A (High Power), 1.3 A (Low Power)

***Based on ratio of 5% transmit, 5% receive, and 90% standby

Messages

The GPSCOM 170 uses a flashing on-screen message indicator to alert you to important information. Whenever the message indicator appears, press **PAGE** to view the message page. There are two types of messages: temporary alerts and condition alerts. Temporary alerts are cleared from the message page after viewing, while condition alerts remain until the condition has been resolved. Pay careful attention to all messages for your own safety.

Accuracy has been Degraded—The accuracy of the receiver has been degraded beyond 500 meters due to poor satellite geometry or data quality. You should check other navigational sources to verify the position indicated.

Active Waypoint Can't Be Deleted—You have attempted to change the 'Active To' or 'Active From' waypoint. Clear the active route or GOTO before making your changes.

Already Exists—The name you are entering already exists in memory.

Battery Power is Low—The Ni-Cad battery is low and should be recharged.

Battery Power is too Low to Transmit—Battery power is too low to allow transmitting.

COM Failed—The VHF com has failed. Take the unit to an authorized service center.

GPS and COM Turned Off—The GPS and Com functions are turned off due to low battery voltage.

Leg Not Smoothed—The upcoming route leg is too short for smooth waypoint transitions.

Need 2D Altitude—The unit needs altitude input in order to start and/or continue 2D navigation.

No DGPS Position—Not enough data is available to compute a DGPS position.

No RTCM Input—The beacon receiver is improperly connected or baud rates do not match.

Oscillator Needs Adjustment—The unit has detected excessive drift in its internal crystal oscillator which may result in longer acquisition time. Take the unit to an authorized service center.

Poor GPS Coverage—The unit cannot acquire the necessary number of satellites to compute a position. Try another location with a clearer view of the sky.

Power Down and Re-init—The unit is not able to calculate a position due to abnormal satellite conditions. Turn the unit off and verify the last position shown by other means. Try the unit again later, possibly in a different location.

Read Only Mem has Failed—The permanent memory has failed and the unit is not operable. Take the unit to an authorized service center.

Received an Invalid WPT—A waypoint was received during upload transfer that has an invalid identifier.

Route Waypoint Can't be Deleted—The waypoint you are trying to delete is part of a route. Delete the waypoint from the route before removing it from memory.

Receiver has Failed—A failure in receiver hardware has been detected. If this message persists, take the unit to an authorized dealer.

Route is Full—You have attempted to add more than 30 waypoints to a route.

Messages

Route is not Empty—You have attempted to copy into a route already in use.

RTCM Input has Failed—DGPS data being received has been lost. You are no longer receiving the beacon signal.

Searching the Sky—The unit is searching the sky for almanac data or the unit is in AutoLocate mode.

Stuck PTT—The unit is continuously transmitting due to a stuck microphone condition.

Stored Data was Lost—All waypoints, routes, time and almanac data has been lost due to battery failure or clearing the receiver's memory.

Transfer has been Completed—The receiver is finished uploading or downloading information to the connected device.

Weather Alert Tone Detected—The unit has detected the NOAA severe weather tone.

WPT Memory is Full—You have used all 250 waypoints. Delete unwanted waypoints to make room for new entries.

Map Datums

The following list shows the map datums available for the GPSCOM 170. Menu page abbreviations are listed first, followed by the corresponding map datum name and area. The default map datum for the GPSCOM 170 is WGS 84.

Adindan	Adindan- Ethiopia, Mali, Senegal, Sudan	European 1950	European 1950- Austria, Belgium, Denmark, Finland, France, Germany, Gibraltar, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland
Afgooye	Afgooye- Somalia	European 1979	European 1979- Austria, Finland, Netherlands, Norway, Spain, Sweden, Switzerland
AIN EL ABD '70	AIN EL ANBD 1970- Bahrain Island, Saudi Arabia	Finland Hayfrd	Finland Hayford- Finland
Anna 1 Ast '65	Anna 1 Astro '65- Cocos Isl.	Gandajika Base	Gandajika Base- Republic of Maldives
ARC 1950	ARC 1950- Botswana, Lesotho, Malawi, Swaziland, Zaire, Zambia, Zimbabwe	Geod Datm '49	Geodetic Datum '49- New Zealand
ARC 1960	ARC 1960- Kenya, Tanzania	Guam 1963	Guam 1963- Guam Island
Ascnsn Isld '58	Ascension Island '58- Ascension Island	Gux 1 Astro	Gux 1 Astro- Guadalcanal Island
Astro B4 Sorol	Astro B4 Sorol Atoll- Tern Island	Hjorsey 1955	Hjorsey 1955- Iceland
Astro Bcn "E"	Astro Beacon "E"- Iwo Jima	Hong Kong '63	Hong Kong '63- Hong Kong
Astro Dos 71/4	Astro Dos 71/4- St. Helena	Hu-Tzu-Shan	Hu-Tzu-Shan- Taiwan
Astr Stn '52	Astronomic Stn '52- Marcus Island	Indian Bngldsh	Indian- Bangladesh, India, Nepal
Astrln Geod '66	Australian Geod '66- Australia, Tasmania Island	Indian Thailand	Indian- Thailand, Vietnam
Astrln Geod '84	Australian Geod '84- Australia, Tasmania Island	Indonesia '74	Indonesia 1974- Indonesia
Bellevue (IGN)	Efate and Erromango Islands	Ireland 1965	Ireland 1965- Ireland
Bermuda 1957	Bermuda 1957- Bermuda Islands	ISTS 073 Astro	ISTS 073 ASTRO '69- Diego Garcia
Bogata Observ	Bogata Observatory- Colombia	Johnston Island	Johnston Island Kandawala Kandawala- Sri Lanka
Campo Inchspe	Campo Inchauspe- Argentina	Kerguelen Isld	Kerguelen Island
Canton Astro '66	Canton Astro 1966- Phoenix Islands	Kertau 1948	Kertau 1948- West Malaysia, Singapore
Cape	Cape- South Africa	L. C. 5 Astro	Cayman Brac Island
Cape Canavrl	Cape Canaveral- Florida, Bahama Islands	Liberia 1964	Liberia 1964- Liberia
Carthage	Carthage- Tunisia	Luzon Mindanao	Luzon- Mindanao Island
CH-1903	CH 1903- Switzerland	Luzon Philippine	Luzon- Philippines (excluding Mindanao Island)
Chatham 1971	Chatham 1971- Chatham Island (New Zealand)	Mahe 1971	Mahe 1971- Mahe Island
Chua Astro	Chua Astro- Paraguay	Marco Astro	Marco Astro- Salvage Island
Corrego Alegre	Corrego Alegre- Brazil	Massawa	Massawa- Eritrea (Ethiopia)
Djakarta	Djakarta (Batavia)- Sumatra Island (Indonesia)	Merchich	Merchich- Morocco
Dos 1968	Dos 1968- Gizo Island (New Georgia Islands)	Midway Ast '61	Midway Astro '61- Midway
Easter Isld 67	Easter Island 1967	Minna	Minna- Nigeria

Map Datums

NAD27 Alaska	North American 1927- Alaska	Prov S Am '56	Prov So Amrcin '56- Bolivia, Chile, Colombia, Ecuador, Guyana, Peru, Venezuela
NAD27 Bahamas	North American 1927- Bahamas (excluding San Salvador Island)	Prov S Chln '63	Prov So Chilean '63- S. Chile
NAD27 Canada	North American 1927- Canada and Newfoundland	Puerto Rico	Puerto Rico & Virgin Islands
NAD27 Canal Zone	North Am. 1927- Canal Zone	Qatar National	Qatar National- Qatar
NAD27 Caribbn	North American 1927- Caribbean (Barbados, Caicos Islands, Cuba, Dom. Rep., Grand Cayman, Jamaica, Leeward and Turks Islands)	Qornoq	Qornoq- South Greenland
NAD27 Central	North American 1927- Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua)	Reunion	Reunion- Mascarene Island
NAD27 CONUS	North Am. 1927- Mean Value	Rome 1940	Rome 1940- Sardinia Island
NAD27 Cuba	North American 1927- Cuba	RT 90	Sweden
NAD27 Grnland	North American 1927- Greenland (Hayes Peninsula)	Santo (Dos)	Santo (Dos)- Espirito Santo Island
NAD27 Mexico	N. American 1927- Mexico	Sao Braz	Sao Braz- Sao Miguel, Santa Maria Islands (Azores)
NAD27 San Sal	North American 1927- San Salvador Island	Sapper Hill '43	Sapper Hill 1943- East Falkland Island
NAD83	North American 1983- Alaska, Canada, Central America, CONUS, Mexico	Schwarzeck	Schwarzeck- Namibia
Nhrwn Masirah	Nahrwn- Masirah Island (Oman)	Sth Amrcn '69	South American '69- Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Venezuela, Trinidad and Tobago
Nhrwn Saudi A	Nahrwn- Saudi Arabia	South Asia	South Asia- Singapore
Nhrwn United A	Nahrwn- United Arab Emirates	SE Base	Southeast Base- Porto Santo and Madiera Islands
Naparima BWI	Naparima BWI- Trinidad and Tobago	SW Base	Southwest Base- Faial, Graciosa, Pico, Sao Jorge and Terceira Islands (Azores)
Obsrvtorio '66	Observatorio 1966- Corvo and Flores Islands (Azores)	Timbalai 1948	Timbalai 1948- Brunei and E. Malaysia (Sarawak and Sabah)
Old Egyptian	Old Egyptian- Egypt	Tokyo	Tokyo- Japan, Korea, Okinawa
Old Hawaiian	Old Hawaiian- Mean Value	Tristan Ast '68	Tristan Astro 1968- Tristan da Cunha
Oman	Oman- Oman	Viti Levu 1916	Viti Levu 1916- Viti Levu/ Fiji Islands
Ord Srvy GB	Old Survey Grt Britn- England, Isle of Man, Scotland, Shetland Isl., Wales	Wake-Eniwetok	Wake-Eniwetok- Marshall Isl.
Pico De Las Nv	Canary Islands	WGS 72	World Geodetic System 1972
Ptcairn Ast '67	Pitcairn Astro '67- Pitcairn Isl.	WGS 84	World Geodetic System 1984
		Zanderij	Zanderij- Surinam

Time Offset Chart

Time Offset Chart

Reference the table below to find the UTC-to-local time offset for your longitudinal zone. If you are in a day-light savings time zone, add one hour to the offset. For example, if you are at longitude W081.0°00.00' and UTC time is 16:00, local time is 11:00 standard time. The time zone boundaries given below may be different depending on your area. Consult your charts for more accurate information concerning time zones.

Longitudinal Zone	Offset	Longitudinal Zone	Offset
W180.0° to W172.5°	-12	E007.5° to E022.5°	1
W172.5° to W157.5°	-11	E022.5° to E037.5°	2
W157.5° to W142.5°	-10	E037.5° to E052.5°	3
W142.5° to W127.5°	-9	E052.5° to E067.5°	4
W127.5° to W112.5°	-8	E067.5° to E082.5°	5
W112.5° to W097.5°	-7	E082.5° to E097.5°	6
W097.5° to W082.5°	-6	E097.5° to E112.5°	7
W082.5° to W067.5°	-5	E112.5° to E127.5°	8
W067.5° to W052.5°	-4	E127.5° to E142.5°	9
W052.5° to W037.5°	-3	E142.5° to E157.5°	10
W037.5° to W022.5°	-2	E157.5° to E172.5°	11
W022.5° to W007.5°	-1	E172.5° to E180.0°	12
W007.5° to E007.5°	0		

A

Accessories	.67
Acquiring Satellites	.6, 66
Activating a Route	.45
Active Route Page	.46
Altitude Display	.21
Antenna Height	.33

B

Battery Pack	.68, 69
Battery Voltage Indicator	.20
Belt Clip	.67
Active Route Page	.46
Altitude Display	.21
Antenna Height	.33

C

CDI Scale Setup	.59
Calling Channel	.32
Carrying Case	.67
Cautions	.iv
Channel Definition Page	.36
Channel List	.70-71
Channel Lockout	.37
Com Setup Page	.29
Compass Page	.12, 50
Copying and Clearing Routes	.44

D

DGPS Interface	.62
Data Entry	.8
Date and Time Setup	.57
Deleting Waypoints	.24
Distance and Sun Calculations	.56
Dual Watch	.17

E

EZinit	.65
Editing Waypoints	.27
Editing Routes	.46
Environment Canada	.16
Estimated Time Enroute (ETE)	.11

F

FCC	.ii
Flex Antenna	.67

G

GOTO	.10
GPS Pages	.13

H

Highway Page	.11
--------------	-----

I

Initializing the Receiver	.64
Interface Setup	.61

K

Keys and Controls	.4
-------------------	----

M

Map GOTO	.53
Magnetic Heading	.60
MOB	.39
Managing the Track Log	.55
Map Datums	.55, 74
Map Page	.9
Map Setup Page	.54
Maritime Radio User's Guide	.14
MOB	.39
Map Page	.9
Marine Radio License	.2
Marking a Position	.8
Marking a Waypoint	.53
Memory Bank Page	.34

Index

M

Memory List Editing	35
Memory Page	37
Menu Page	59
Message Page	12, 56
Messages	74, 75
Moving Map Page	10, 51

N

NMEA Interface	61
National Weather Service	16
Navigation Guidance Page	48
Navigation Setup	59
Navigation Simulator	63
Nearest Waypoint Page	23
Ni-Cad Battery Pack	6, 69

O

On-Route GOTO's	47
-----------------	----

P

Packing List	ii
Panning Function	52
Poor GPS Coverage	19
Position Format	59
Position Page	7, 21
Power Override	38
Powering Up	6
Priority Scan	31

R

Range Rings	51
Receiver Status	19
Reference Waypoints	26
Renaming Waypoints	27
Route Navigation	42

S

Satellite Status Page	6, 18
Scan Timeout	32
Scanning Modes and Setup	31
Scanning Waypoints	28
Screen Backlighting and Contrast	50
Selecting Channel 16/9	16
Selecting Map Scales	52
Selecting a Channel	14
Selecting a GOTO Destination	39
Selecting a Weather Channel	16
Selecting an Operating Band	32
Signal Strength Bars	18
Simulator Mode	63
Sky View	18
Specifications	72, 73
Speed, Track, and Position	63
System Setup	57

T

Time Format	50
Time Offset	67
Time Offset Chart	78
Tips on Transmitting	15
Tips on Using TracBack	41
Tone Settings	50
TracBack	40
Track Log Display	55
Track Log Setup Page	54
Track Method	55
Track Setup Window	54
Transmitting	15
Tri Watch	30
Trickle Charger	69
Trip Odometer	21

U

Unit Description	2
Units of Measure	60
Using the Compass Page	50
Using the Highway Page	49
Using the VHF Transceiver	14

V

VHF Communication Pages	29
VHF Line-of-Sight	33
VHF Status Field	7

W

Warranty	80
Waypoint Comments	27
Waypoint Definition Page	25
Waypoint List Page	24
Waypoint Submenus	23
Waypoints	22
Weather Alert Page	30
Welcome Page	64
Wrist Strap	67

Z

Zooming and Panning	52
-------------------------------	----

LIMITED WARRANTY

GARMIN Corporation warrants this product to be free from defects in materials and workmanship for one year from the date of purchase. GARMIN will, at its sole option, repair or replace any components which fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor. The customer is, however, responsible for any transportation costs. This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration or repairs. GARMIN assumes no responsibility for special, incidental, punitive or consequential damages, or loss of use.

The warranties and remedies contained herein are exclusive and in lieu of all other warranties expressed or implied, including any liability arising under warranty of merchantability or fitness for a particular purpose, statutory or otherwise. This warranty gives you specific legal rights, which may vary from state to state.

To obtain warranty service, call the GARMIN Customer Service department (913-397-8200) for a returned merchandise tracking number. The unit should be securely packaged with the tracking number clearly marked on the outside of the package, and sent freight prepaid and insured to a GARMIN warranty service station. A copy of the original sales receipt is required as the proof of purchase for warranty repairs. GARMIN retains the exclusive right to repair or replace the unit or software at its sole discretion.



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Part Number 190-00093-00 Rev. D