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GPSMAP® 196

portable aviation receiver

pilot's guide

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INTRODUCTION

Thank you for choosing the Garmin GPSMAP® 196, an unsurpassed portable aviation receiver that utilizes the proven performance of Garmin GPS and full-featured mapping. Take a moment now to compare the contents of this package with the packing list on the outside of the box. If any pieces are missing, contact your Garmin dealer immediately.

About This Manual

To get the most out of your new navigation system, take time to read this manual and learn the operating procedures for your unit:

The **Introduction** contains the Table of Contents. The **Getting Started** section provides information such as an overview of unit features and how to turn the unit on and adjust the backlight.

The **Basic Operation in Aviation Mode** section provides you with information about navigating with the GPSMAP 196 in Aviation Mode. The **Aviation Mode Pages** section reviews, in detail, the main pages and features of Aviation Mode, such as the E6B.

The **Basic Operation in Land Mode** section provides you with information about navigating with the GPSMAP 196 in Land Mode. The **Land Mode Pages** section reviews in detail, the main pages and features in Land Mode, such as creating waypoints.

The **Basic Operation in Water Mode** section provides you with information about navigating with the GPSMAP 196 in Water Mode.

The **Water Mode Pages** section reviews the main pages and features in Water Mode. For complete information about some of the main pages and features in Water Mode, refer to the Aviation and Land sections.

The **Main Menu** section describes pages and features found in the Main Menu.

The **Appendix** contains specifications, optional accessories, maintenance information, and other product information.

An **Index** is provided at the end of the manual for reference.

Manual Conventions

This manual uses the term **Warning** to indicate a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

This manual uses the term **Caution** to indicate a potentially hazardous situation, which, if not avoided, may result in minor injury or property damage. It may also be used without the symbol to alert you to avoid unsafe practices.

Table of Contents

⚠ Warning

Failure to avoid the following potentially hazardous situations could result in an accident or collision resulting in death or serious injury.

When installing the GPSMAP 196 in a vehicle, place the unit securely so that it does not interfere with vehicle operating controls or obstruct the driver's view of the road (see diagram).

Do not mount where driver's field of vision is blocked.
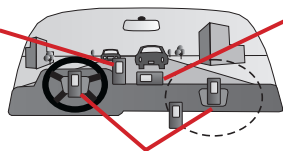
Do not place unsecured on the vehicle dash.

Do not mount in front of an airbag field of deployment.

Always operate the vehicle in a safe manner. Do not become distracted by the GPSMAP 196 while driving, and always be fully aware of all driving conditions. Minimize the amount of time spent viewing the screen of the GPSMAP 196 while driving and use voice prompts when possible. Do not enter destinations, change settings, or access any functions requiring prolonged use of the unit's controls while driving. Pull over in a safe and legal manner before attempting such operations.

When navigating, carefully compare information shown on the GPSMAP 196 to all available navigation sources, including information from street signs, visual sightings, and maps. For safety, always resolve any discrepancies or questions before continuing navigation.

Use the electronic chart in the GPSMAP 196 only to facilitate, not to replace, the use of authorized government charts. Official government charts and notices to mariners contain all information needed to navigate safely.

When navigating in an aircraft, use the GPSMAP 196 only as an aid for VFR navigation. Use obstacle data only as an aid to situational awareness.

WARNING: This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, refer to our Web site at http://www.garmin.com/prop65.

⚠ Caution

Failure to avoid the following potentially hazardous situations may result in injury or property damage.

The GPSMAP 196 is designed to provide you with route suggestions. It does not reflect road closures or road conditions, traffic congestion, weather conditions, or other factors that may affect safety or timing while driving.

Use the GPSMAP 196 only as a navigational aid. Do not attempt to use the GPSMAP 196 for any purpose requiring precise measurement of direction, distance, location, or topography. This product should not be used to determine ground proximity for aircraft navigation.

The Global Positioning System (GPS) is operated by the United States government, which is solely responsible for its accuracy and maintenance. The government's system is subject to changes which could affect the accuracy and performance of all GPS equipment, including the GPSMAP 196. Although the GPSMAP 196 is a precision navigation device, any navigation device can be misused or misinterpreted and, therefore, become unsafe.

Map Data Information: One of the goals of Garmin is to provide customers with the most complete and accurate cartography that is available to us at a reasonable cost. We use a combination of governmental and private data sources, which we identify in product literature and copyright messages shown to the consumer. Virtually all data sources contain inaccurate or incomplete data to some extent. This is particularly true outside the United States, where complete and accurate digital data is either not available or prohibitively expensive.

Care Information

To resolve problems that cannot be remedied using this guide, contact Garmin Product Support in the U.S.A. at 800/800.1020 or Garmin Europe at 44/0870.8501241.

Cleaning the Unit

The GPSMAP 196 is constructed of high quality materials and does not require user maintenance other than cleaning. Clean the unit using a cloth dampened with a mild detergent solution and then wipe dry. Avoid chemical cleaners and solvents that may damage plastic components.

Storing the GPSMAP 196

Do not store the GPSMAP 196 where prolonged exposure to temperature extremes can occur (such as in the trunk of a car) as permanent damage may result. User information, such as waypoints and routes, is retained in the unit's memory without the need for external power. It is always a good practice to back up important user data by manually recording it or downloading it to a PC (transferring it to MapSource).

Immersing the Unit in Water

The GPSMAP 196 is waterproof to IEC Standard 60529 IPX7. It can withstand immersion in 1 meter of water for 30 minutes. Prolonged submersion can cause damage to the unit. After submersion, be certain to wipe and air dry the unit before reuse or charging.

GETTING STARTED

Unit Overview

The GPSMAP 196 is an all-in-one, versatile aviation, automotive, and marine navigator-perfect for air, land, or water. This portable GPS navigator features a built-in basemap, Jeppesen aviation database, U.S. obstacle database, and auto routing to provide you with automatically generated turn-by-turn directions.

GPS antenna

12-Level gray scale LCD display screen with backlight

Backlit keypad for easy nighttime operation

Detachable GPS antenna collapses for storage. Be sure the antenna is up (as shown here) to receive satellite signals. Refer to the Appendix, page 103, for instructions on removing the antenna.

External power connector under weather cap

Battery compartment

Slot for optional data card

Serial number

To remove the battery lid, turn the D-ring 1/4 turn counterclockwise, and pull away.

The GPSMAP 196 uses 4 AA batteries, which can be Alkaline, rechargeable, Lithium, or Ni-Cad. Immediately after installing new batteries, turn the unit on to ensure that the unit's power indicator shows a full charge. Replace all batteries at the same time. Do NOT mix new and used batteries. Do NOT mix Alkaline batteries with Lithium or Ni-Cad rechargeable batteries. When installing new batteries, observe the polarity markings in the case.

> *NOTE: The GPSMAP 196 saves user data in non-volatile memory. Data is not lost when the batteries are removed.*

To reinstall the battery lid, place the locking pin into the unit and turn the D-ring 1/4 turn clockwise.

Turning On the GPSMAP 196

The first time you turn on your new GPSMAP 196, the receiver must collect satellite data and establish its present location. To ensure proper initialization, the GPSMAP 196 is shipped from the factory in AutoLocate mode, which allows the receiver to "find itself" anywhere in the world. Before you turn on the unit to start initialization, be sure that the antenna is rotated up as shown on page 1, and it has a clear and unobstructed view of the sky to receive satellite signals.

To turn on and off the GPSMAP 196:

1. Press and hold the **POWER** key. When the unit turns on, a tone sounds and the Warning Page appears.

WARNING
For VFR use only as an aid to prudent navigation. All information is presented for reference only. You assume total responsibility and risk associated with using this device. Obstacle data is provided only as an aid to situational awareness.

I Agree

Americas Aviation Data Cycle 0508
Effective 04-Aug-2005 to 01-Sep-2005
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US Obstacle Database 2.00
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Warning Page

2. Read and be sure you understand the warning. Press **ENTER** to continue.

3. To turn off the GPSMAP 196, press and hold the **POWER** key again.

Adjusting the Backlight and Volume

The **POWER** key controls the backlight and contrast of the screen.

To adjust the backlight and contrast level:

1. Press and quickly release the **POWER** key.

2. Press the **ROCKER** up to increase the brightness or down to decrease. Press right to increase the contrast or left to decrease.

3. Press **ENTER** or **QUIT** to close the Backlight/Contrast adjustment window. Press **MENU** to view the options menu.

Contrast adjustment slider

Backlight adjustment slider
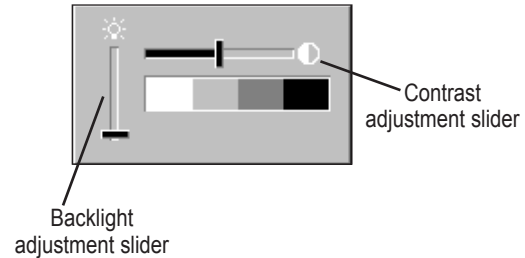
Getting Satellite Signals

After you turn on the GPSMAP 196, the unit automatically begins searching for satellites. The GPS Page appears while the unit is gathering satellite signals and acquiring a fix. This process should take only a few minutes. While the GPSMAP 196 is getting satellite signals, the GPS Page shows the status as "Acquiring Satellites."

It can take a few minutes to acquire satellites and show your current location on the map. Be patient as the unit acquires satellite data. To get signals more quickly, be sure the antenna is raised to the up location shown in the image on .

GPS Tab

> **NOTE:** *While acquiring satellites, the Map Page can show the wrong location, such as China. This does not mean your unit has the wrong data loaded. The GPS receiver needs a few more minutes to acquire satellites and find your current location.*

Viewing GPS Status With the GPS Tab

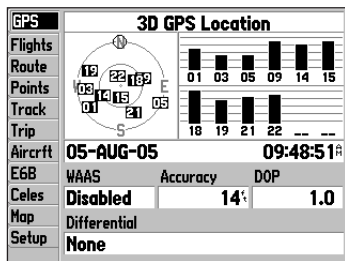The GPS tab provides a visual reference of satellite acquisition, receiver status, and accuracy. The sky view and signal strength bars give an indication of what satellites are visible to the receiver and whether they are being tracked.

As the receiver locks onto satellites, a signal strength bar appears for each satellite in view, with the appropriate satellite number underneath each bar. The numbers shown below each bar represent the particular satellite that is being received. Numbers above 33 indicate WAAS satellites.

The sky view shows a birds-eye view of the location of each satellite relative to the receiver's last known location. The outer circle represents the horizon (north up), the inner circle represents 45º above the horizon, and the center point represents a location directly overhead. You can also set the sky view to a Track Up configuration, causing the top of the sky view to align along your current track heading.

Signal strength bars

Sky view

Receiver status field

GPS Tab

The progress of satellite acquisition is shown in three stages:

- **No signal strength bars**—the receiver is looking for the satellites indicated.
- **Grey signal strength bars**—the receiver has found the satellite and is collecting data.
- **Black signal strength bars**—the receiver has collected the necessary data from this satellite.

As soon as the GPSMAP 196 has collected the necessary data from the best satellites in view to calculate a fix, the status field indicates the status of the receiver. The unit then updates the location, date and time.

Receiver Status

The Receiver Status field shows one of the following conditions:

- **Searching the Sky**—the receiver is looking for satellites.
- **AutoLocate**—the receiver is looking for any satellite whose almanac has been collected, which can take up to 5 minutes.
- **Acquiring Satellites**—the receiver is looking for and collecting data from satellites visible at its last known or initialized location, but has not acquired a fix.
- **2D GPS Location**—At least three satellites have been acquired and a two-dimensional location fix has been calculated. "2D Differential" appears when you are receiving DGPS corrections in 2D mode and a "D" appears on the strength bar of satellites being corrected.
- **3D GPS Location**—At least four satellites have been acquired and a three-dimensional fix has been calculated. "3D Differential" appears when you are receiving DGPS corrections in 3D mode and a "D" appears on the strength bar of satellites being corrected.
- **Lost Satellite Reception**—the receiver is no longer tracking enough satellites for a 2D or 3D fix.
- **Receiver Not Usable**—the receiver is unusable, possibly due to interference or abnormal satellite conditions. Turn the unit off and back on to reset.
- **Simulating GPS**—the receiver is in Simulator Mode.
- **GPS Off**—the GPS receiver is turned off.

GPS Tab Options

Press **MENU** twice to open the Main Menu. Use the **ROCKER** to highlight GPS. Press **MENU** to open the options menu.
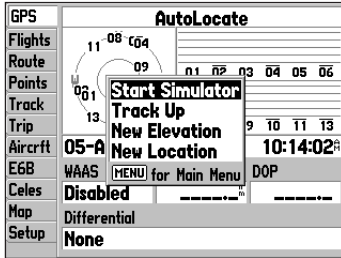
GPS Tab Options Menu

Start/Stop Simulator—starts and stops Simulator Mode, which is helpful when learning how to use your unit.

WAAS On—enables WAAS capability. Refer to page 105 of the "Appendix" for more information about WAAS.

Track/North Up Skyview—orients the sky view page on the GPS tab to north up or track up.

New Altitude—allows you to manually enter your altitude.

New Location—allows you to enter a new location automatically or using the map.

GPS Tips

While the receiver is gathering information, your location on the map can show as different from where you actually are located. Be patient; as soon as the receiver gathers enough satellite information, your proper location is shown on the map.

Any time you have traveled more than 600 miles with the GPS receiver turned off, the receiver can take longer than normal to initialize and find your location.

The GPS receiver can lose satellite signals due to interference from such items as buildings, tunnels, and heavy tree cover. Monitoring the GPS status is recommended.

To learn about GPS, refer to "Learning about GPS" on page 104.

Learning About the Keypad

PAGE Key

- Press to cycle through the main pages in sequence and return the screen from a submenu page.

- Press and hold to switch between Aviation, Land, and Water Modes.

QUIT Key

- Press to cycle through the main pages in reverse sequence, revert to the previous value in a data entry field, or cancel a function.

ENTER/MARK Key

- Press to select a highlighted option, initiate entry, and then confirm.

- Press and hold to mark a waypoint.

MENU Key

- Press to view the Options Menu for the current page.

- Press twice to show the Main Menu.

POWER Key

- Press and hold to turn the unit on or off.

- Press and release to adjust the backlighting and contrast.

IN/OUT Keys

- Press to zoom in or out on the Map Page.

ROCKER Keypad

- Press up, down, right or left to move through lists, highlight fields, on-screen buttons and icons, enter data, or move the map pointer.

NRST/FIND Key

- Shows the nearest airports, navaids, points of communication, and airspace boundaries in Aviation Mode.

- Press multiple times in Aviation Mode to show the Find Menu.

DIRECT TO Key

- Press to start a Goto using airports, navaids, recently used waypoints, or user-created waypoints.

- Press and hold to show additional information for the current destination (such as communication frequency and runway data).

Using the GPSMAP 196

This section explains how to enter and select information with the GPSMAP 196. To switch between Aviation, Water, and Land Modes, press and hold **PAGE**. Use the **ROCKER** to select a mode, and press **ENTER**.

Understanding Terms

The GPSMAP 196 unit's advanced keypad system is designed to allow quick, convenient selection of navigation options and data entry. As you progress through this Pilot's Guide, you will often be directed to press a specific key or highlight a field on the screen. When you are directed to press a key, you should press and quickly release the key. If the key needs to be held down for a period of time to start a secondary function, the instructions tell you to do so. When a field is selected on the screen, it is highlighted in yellow. The location of the highlight is controlled by the **ROCKER**.

The following features are referred to throughout this manual:

Highlight—move the highlighted area on the screen up, down, left, or right with the **ROCKER** to select individual fields. Moving the highlight to a given location allows you to make a selection, begin data entry, or scroll through a list.

Field—the location on a page where data or an option can be entered and shown. Select (highlight) a field using the **ROCKER** to begin entering data or selecting options.

On-Screen Button—use the **ROCKER** to highlight a button and press **ENTER** to select the button.

Scroll Bar—when viewing a list of items too long to show on the screen, a scroll bar appears along the right side of the list. The location of the scroll bar indicates which portion of the list is currently shown. To scroll through a list, press up or down on the **ROCKER**.

Default—the factory setting saved in the unit's memory. You can change the settings as you like, but you can also revert to the factory (default) settings when you select Restore Defaults.
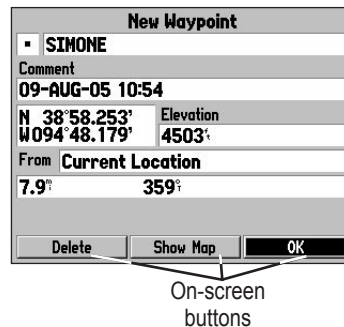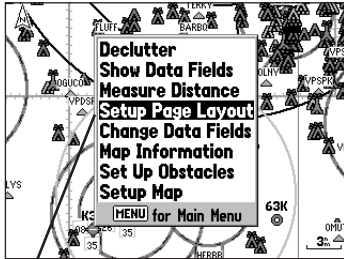
On-screen
buttons

Selecting Options and Entering Data

To enter data and select options, you must use the **ROCKER** to highlight, select, or choose an item in a list or a field on the screen. Use the **ENTER** and **ROCKER** keys to select options, enter names and numbers in data fields, and start your selections.

To select and start an option:

1. Press **MENU** on any page. An options menu appears with a list of optional features for that page.

2. Use the **ROCKER** to move the highlight up, down, right, or left on the menu to your selection.

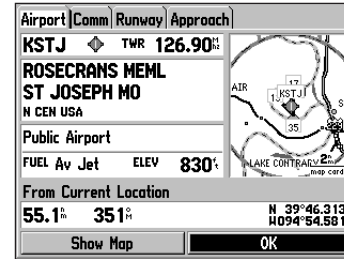Selecting an option from an options menu

To exit a menu or return to the previous setting:

1. Press **QUIT** to move backward through your steps.

2. To return to the starting page, press **QUIT** repeatedly.

To select and start an on-screen button:

1. On a page with on-screen buttons, use the **ROCKER** to highlight the on-screen button you want.

2. Press **ENTER**.

On-screen button

To enter data in a data field:

1. Use the **ROCKER** to highlight the data field you want, and press **ENTER** to activate the field.

2. Press up or down on the **ROCKER** to select characters. Press right to move to the next character or press left to move back to the previous character. If there are two lines of data, keep pressing right to drop to the next line.

3. After entering the data, press **ENTER**.

Entering data

> **NOTE:** *To clear the entire data field, highlight the left-most character field and press left once more on the* **ROCKER***.*

Not all fields are programmable. When you are on a page with fields that are not selectable, the highlight skips over them.

GPSMAP 196 Databases

Your GPSMAP 196 comes with a Jeppesen® database, an Obstacle database, and a basemap. You also should update your Jeppesen database to use the most current data. Refer to page 109 in the "Appendix" for more information.

MapSource Detailed Maps

Optional Garmin Data Cards and MapSource CD-ROMs enhance the versatility of your GPSMAP 196. With optional MapSource City Select® data, you can view listings of nearby restaurants, lodging, shopping centers, attractions, and entertainment, and even retrieve addresses and phone numbers for any listed location. With optional BlueChart data, you can access marine navaids, wrecks, obstructions, and anchorage locations.

The included PC Interface Cable (with a serial connector) is used to transfer MapSource CD-ROM data to the optional Data Card.

For compatible MapSource products, refer to the Garmin Web site at http://www.garmin.com/cartography/

Simulator Mode

The GPSMAP 196 contains a Simulator Mode. Simulator Mode is helpful for practicing with the unit indoors or when no satellite signals are available or if the antenna is not connected. All waypoints and routes created in Simulator Mode are retained in memory for future use. The following section describes how to use Simulator Mode and walks you through some basic navigation using the simulator.

> *NOTE: Do not attempt to navigate using Simulator Mode. When the unit is set to Simulator Mode, the GPS receiver is turned off. Any Satellite Signal Strength Bars shown are only simulations and do not represent the strength of actual satellite signals.*

Starting Simulator Mode

You can start Simulator Mode for the GPS tab or the Setup tab on the Main Menu.

To start Simulator Mode using the GPS tab:
1. Press **MENU** twice to show the Main Menu.
2. Highlight **GPS** from the vertical menu.
3. Press **MENU** to open the GPS tab options menu.
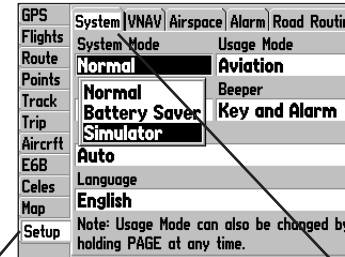4. Highlight **Start Simulator**, and press **ENTER**.
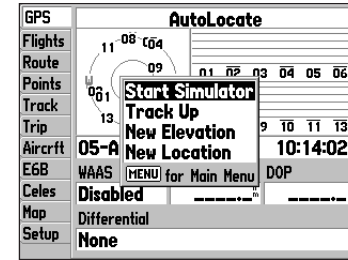
To start Simulator Mode using the Setup tab:
1. Press **MENU** twice to show the Main Menu.
2. Highlight **Setup** from the vertical menu.
3. Highlight the **System** sub tab.
4. Select **Simulator** from the **System Mode** field.

Setup tab of Main Menu   System sub tab

Entering a New Location

From the GPS options menu you can enter a New Location and New Altitude to simulate from.

To enter a New Location using the map:

1. Press **MENU** twice and highlight **GPS** from the vertical menu.
2. Press **MENU** to open the options menu**.**
3. Highlight **New Location**, and press **ENTER**.
4. Highlight **Use Map**, and press **ENTER**.
5. Use the **ROCKER** to move the panning arrow to the location on the map you want, and press **ENTER**.

### To adjust the simulated speed, heading, and altitude from the Panel or HSI pages:

1. Press up on the **ROCKER** increase the speed in 10 knot/kph/mph increments. Press down on the **ROCKER** to decrease the speed in the same increments.
2. Press left or right on the **ROCKER** to change heading.
3. Press the **IN** and **OUT** Zoom keys to increase or decrease altitude (Aviation Mode only).

BASIC OPERATION IN AVIATION MODE

Aviation Mode Page Sequence

The GPSMAP 196 offers three usage modes, Aviation Mode (default), Land Mode, and Water Mode. The main pages are linked together in a series that you can cycle through by pressing **PAGE** to move forward and **QUIT** to reverse. Each page also has an options menu that allows you to customize each page (in all three modes) to your preferences and/or select features that specifically relate to that page. To view the options menu for any page, press **MENU**.

Aviation Mode features four main pages: Map Page, Panel Page, Active Route Page, and Position Data Page. An example of each page in Aviation Mode appears below. Each of these pages has a specific use and each page is discussed later in this manual. Aviation Mode is the default mode for the GPSMAP 196. This manual first addresses each page, such as the Map Page, as shown in Aviation Mode. The manual then describes the page as shown in Land and Water Mode.
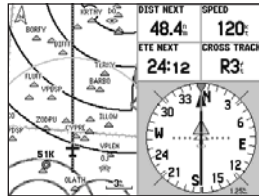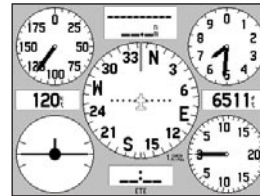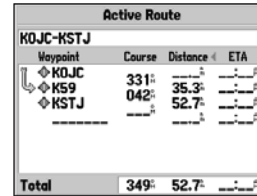
| Map Page | Panel Page | Active Route Page | Position Data Page |

To switch usage modes:
1. Press and hold **PAGE**.
2. Use the **ROCKER** to select Aviation, Land, or Water, and press **ENTER**.

Creating a Direct To

In Aviation Mode, press **Direct To** Đ► to select a destination. When a Goto or route is currently in use, holding **Direct To** Đ► down briefly shows a detailed information page for the current destination.
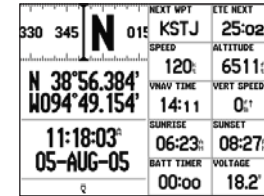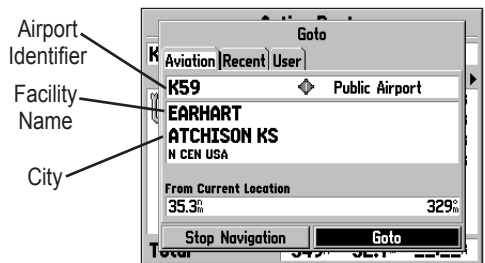
Press **MENU** on any tab of the Goto Page to open an options menu for that tab. Based on the tab you selected, you can **Show Details**, **Select Approach**, **Select Route**, **Find Land Points**, and **Remove Point**.

Goto Page: Aviation Tab

To goto an airport or navaid:

1. Press the **Direct To** Đ► to show the Goto Page. Use the **ROCKER** to show the **Aviation** tab.

2. Press up or down on the **ROCKER** to select the identifier, facility name, or city field, and press **ENTER**.

3. Use the **ROCKER** to enter the word to search. Press up and down to change the highlighted character and right to move to the next character field. As you scroll through the characters the GPSMAP 196 shows database entries with the same characters you have entered to that point. If more than one entry exists in the database for the characters you have entered, a window appears. Use the **ENTER** key and the **ROCKER** to select the point.

4. Press **ENTER** when the point is shown.

5. With the on-screen **Goto** button highlighted, press **ENTER**. The GPSMAP 196 creates a course from your present location to the selected destination.

To goto a recently-used or user-created waypoint:

1. Press the **Direct To** ⧐ to show the Goto Page. Use the **ROCKER** to select the **Recent** or **User** tab.
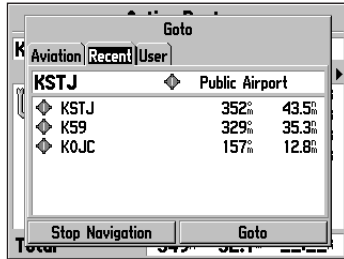
**Goto Page: Recent Tab**

2. Use the **ROCKER** to highlight the point from the list, and press **ENTER**.

   From the **User** tab, you can also select the top waypoint name line and then spell out the waypoint name using the **ENTER** key and the **ROCKER**.

3. Highlight the on-screen **Goto** button, and press **ENTER**. A course is plotted from your present location to the selected destination.

Viewing Details for the Destination

The **Show Details** option shows detailed information for your destination waypoint or the next waypoint in a route. This feature is handy for retrieving airport information, such as communication frequencies and runway information. You can view details by using the options menu or by selecting **Show Details** on the Goto Page menu, and pressing **ENTER**.

To view the details for the selected destination:

1. Press **MENU** to open the options menu. Use the **ROCKER** to highlight **Show Details**, and press **ENTER**.

2. Use the **ROCKER** to select the tab to view the information.
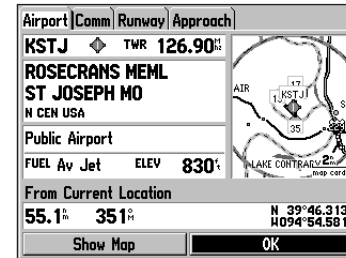
Airport Tab of Details Page

3. Highlight **Show Map**, and press **ENTER** to view the item on the map. Press **QUIT** when done. Highlight **OK**, and press **ENTER** to return to the Goto Page.

When viewing information for the Runway or Approach tabs, use the **ROCKER** to highlight the runway designation or approach name, and press **ENTER**. Then press up or down on the **ROCKER** to scroll through available runways and approaches. Press **ENTER** to select the runway or approach for which you would like to view additional information.

Viewing Frequency Restrictions

The Comm tab on the Airport Details Page provides a list of communication frequencies for that airport. Some frequencies are noted with an asterisk (*), which indicates that the frequency has usage restrictions. You can show the usage restriction information on your GPSMAP 196.

To view usage restrictions for a communication frequency:

1. With the **Comm** tab selected, use the **ROCKER** to highlight any frequency with usage restrictions (noted with an asterisk), and press **ENTER**. A Usage Restrictions Page appears describing the restrictions for the selected frequency.
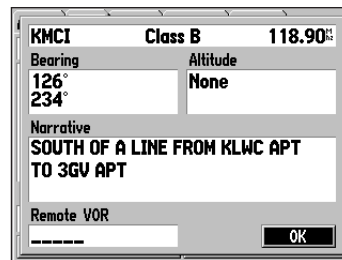
Usage Restrictions Page

2. To return to the Comm Information Page, press **ENTER**.

Finding a Nearby Point

In Aviation Mode, press **NRST/FIND** to open the Nearest Pages. These pages provide detailed information on the nearest airports, airport weather sources, user waypoints within 200 miles of your present location, and other points.

In Water and Land Modes, press **NRST/FIND** to open the Find Menu. You can easily search waypoints, cities, exits, and tide stations using the Find Menu.

Nearest Page: Airport Tab
While in Aviation Mode

Press **MENU** when the Nearest Page is open to show the Nearest Page options menu. From the Nearest Page option menu, you can **Set Airport Criteria**.

Aviation Nearest Categories

In Aviation Mode, the Nearest Pages contains the following information:

Airport—nearest 15; identifier, bearing, distance, length of the longest runway, and common traffic advisory (CTAF) or tower frequency.

Wx (Airport Weather Sources)—nearest 15 airport weather information sources including AWOS, ASOS, and ATIS.

VOR (VHF Omnidirectional Radio Beacons)—nearest 15; identifier, facility type (symbol), bearing, distance, and frequency.

NDB (Non Directional Beacons)—nearest 15; identifier, facility type (symbol), bearing, distance, and frequency.

INT (Intersection)—nearest 15; identifier, bearing, and distance.

User (Waypoints)—nearest 15; name, bearing, and distance.

ARTCC (Air Route Traffic Control Center)—nearest 5; bearing, distance, and frequency.

FSS (Flight Service Station)—nearest 5; bearing, distance, frequency, and VOR (for duplex operations).

Airspace—up to 15 (based on number of alerts provided); name, time to entry (when applicable), and status.

Selecting a Nearby Point as Your Destination

In an emergency, you can press a few keys to have the GPSMAP 196 guide you to the closest point to land.

To select a nearby point as your destination:
1. Press the **NEAREST** key.
2. Use the **ROCKER** to select the sub tab along the top of the page.
3. Highlight the point using the **ROCKER**.
4. Press **Direct To** . The Goto Page opens for the selected point. Or you can press **ENTER** to show the Information Page (Details Page).
5. Press **ENTER** when **Goto** is highlighted.

To select the nearest airport as your destination:
1. Press **NRST** twice to show the Airport tab and highlight the nearest airport.
2. Press **ENTER** to view airport information.
3. Verify the **Goto** button is highlighted, and press **ENTER**.

Viewing Details for a Nearby Point

To view details for a nearby point:
1. Press **NEAREST** to show the nearest pages. Select the sub tab.
2. Use the **ROCKER** to highlight the item on the list and press **ENTER**. The corresponding information page appears.
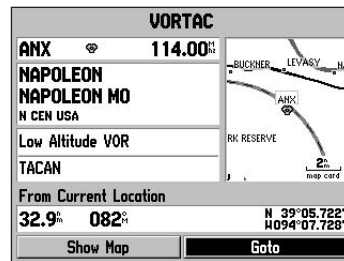
Information Page for a VOR

On airport information pages, use the **ROCKER** to select the sub tabs across the top of the information pages and show the airport data.

3. Press **QUIT** to return to the Nearest Pages. You can also highlight any one of the on-screen buttons to perform that action, such as **Show Map** or **Goto**.

Viewing Communication Frequencies

The Nearest Pages list up to five nearest flight service station (FSS) and air route traffic control center (ARTCC) points of communication. The closest communication point is shown first, with additional points available when selected. For duplex operation, the corresponding VOR is listed (by identifier) and the transmit and receive frequencies are denoted by a TX and RX respectively.

To view additional communication frequencies:
1. Press **NEAREST** to open the Nearest Pages.
2. Use the **ROCKER** to select the **ARTCC** or **FSS** sub tab.
3. Press the **ROCKER** down to highlight **Center** or **Station** (based which tab you are on), and press **ENTER**.
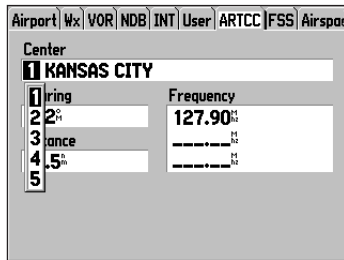
ARTCC Tab

4. Select the numbered item that you want from the list, and press **ENTER** to show the communication information. The lowest numbers on the list are the closest communication points.

Viewing Airspace Alert Information

When an airspace alert appears, press the **NEAREST** to automatically show nearby airspace information in the Airspace tab. This information includes name, time to entry (if applicable), and status. Normally, only one or two airspace alerts occur at a time, but with sectorized controlled airspace, such as many Class B areas, there are more. Status information can appear as follows:

Ahead—your projected course takes you inside an airspace within the next 10 minutes or less.

Near—you are within two nautical miles of an airspace but not projected to enter it.

Near & Ahead—you are within two nautical miles of an airspace and your current course takes you inside the airspace.

Inside Airspace—you are within the boundaries of the airspace.

Viewing Additional Airspace Information

From the Nearest Pages, you can show additional airspace information, such as floor and ceiling limits or communication frequencies.

To view additional airspace information:

1. When an airspace alert appears, press **NEAREST** to show the Nearest Pages and the airspace information. If you are already viewing the Nearest Pages, use the **ROCKER** to select the **Airspace** tab.
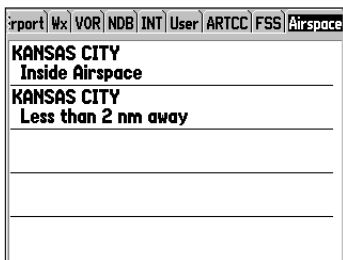
Nearest Pages: Airspace Tab

2. Use the **ROCKER** to select the airspace alert entry on the page, and press **ENTER**. An information page opens to show the controlling agency, status, and floor/ceiling limits.

3. To show a communication frequency for the airspace, select the **Frequencies** button, and press **ENTER**.

   To return to the Nearest Pages, select the **OK** button, and press **ENTER**.

> *NOTE: When an airspace alert appears, press **NEAREST** to automatically show nearest airspace information. Press **NEAREST** a second time to quickly show the nearest airports list. Press **NEAREST** a third time to show the Find Menu.*

Setting Airport Criteria

From the Nearest Airport tab, an options window allows you to filter out airports that do not meet a defined criteria. This allows you to only show airports with a surface type and sufficient runway length you want.

Runway Surface—allows you to set criteria for the type of surface on the runway:

> **Any**—shows any runway, regardless of surface type, including water landing facilities.
>
> **Hard Only**—shows only runways with a concrete, asphalt, or similar sealed surface.
>
> **Hard or Soft**—shows all runways except water landing facilities.
>
> **Water Only**—shows only water landing facilities.

Minimum Runway Length—allows you to enter a specific length for the shortest runway allowed.

To enter airport criteria:

1. Press **NEAREST**, and open the **Airport** tab.
2. Press **MENU** to show the options menu.
3. Select **Set Airport Criteria**, and then press **ENTER**. A window appears with the current settings for runway surface and minimum runway length.

Airport Criteria Page

4. With the runway surface field highlighted, press **ENTER**. Select the surface type, and press **ENTER**.
5. Highlight the minimum runway length field, and press **ENTER**.
6. Use the **ROCKER** to enter the minimum acceptable runway length. Press **ENTER**.

> *NOTE: Use caution when changing the nearest airport criteria. In an emergency, a short runway is still typically preferable to an off-field landing. If you set the runway length too low or exclude many runway surfaces, you may not be alerted to a nearby airport that would be listed otherwise.*

Selecting an Approach

⚠️ **CAUTION:** *The approaches provided in the Jeppesen database are for monitoring purposes only. The GPSMAP 196 is not an IFR-approved instrument and should not be used as a primary source of navigation guidance in instrument conditions.*

When you select an approach, it replaces the destination airport with the sequence of waypoints for the selected approach. Keep in mind that the airport must have a published approach (GPS, RNAV, VOR, NDB, localizer, or ILS) and only the final course segment (usually from final approach fix to missed approach point) of the published approach is available in the GPSMAP 196.

✎ **NOTE:** *When using a route, the selected approach for the destination airport overrides your current route. The original route is saved in the Route tab.*

You can select an approach several ways:
- Press the **Direct To** ⮕ and press **MENU** on the Goto Page, as described in the steps to the right.
- From the Active Goto (or Active Route) Page, press **MENU**.
- From the Airport Details Page, select the Approach tab.

To select an approach for the destination airport:
1. Press the **Direct To** ⮕ to show the Goto Page. Select the destination you want to travel to.
2. Press **MENU** to open the options menu. Highlight **Select Approach**, and press **ENTER**.
3. Use the **ROCKER** to select the approach from the window, and press **ENTER**. A Vectors? window appears. See the following page for more information on vectors.
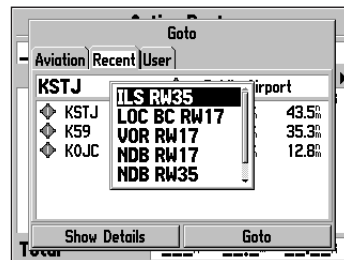
Selecting an Approach

4. Use the **ROCKER** to select **Yes** or **No**, and press **ENTER**. The GPSMAP 196 removes the destination airport from the Goto and replaces it with the approach waypoints.

Understanding Vectors

The Vectors? Option, which appears after you select an approach, determines how you navigate to the final approach waypoint.

If you select **Yes**, the GPSMAP 196 creates an extension of the final course, beyond the final approach waypoint in the database (final approach fix [FAF]). On the Active Route Page, a Vector to Final symbol appears beside the first approach waypoint.

Active Approach Page
Using vectors in the approach

The GPSMAP 196 provides no guidance to the inbound course. The course deviation needle on the graphic HSI remains off-center until you are established on this final approach course. The HSI automatically slews (rotates to show the direction) to the inbound course. The Map Page shows an extension of the final approach course using a bold line.

If **No** is selected for the Vectors? Option, the GPSMAP 196 creates a straight-line course directly to the first waypoint in the approach (from wherever you are when you initiate the approach). This works much like any other route with course guidance from point to point and a turn usually required as you cross each waypoint.

> ⚠ **CAUTION:** *Steep Turns are not allowed on an IFR (Instrument Flight Rules) approach. Follow the approach plate or air traffic control instructions to complete the approach without a steep turn.*

If air traffic control clears your approach to an airport, loading the approach cancels your Direct To and initiates a route to the FAF. Load the approach only when cleared by air traffic control.

You can cancel an approach and/or vectors several ways:

- Press the **Direct To** �**Đ►**, and press **MENU** on the Goto Page.
- From the Active Goto (or Active Route) Page, press **MENU**.

To cancel the vectors and/or approach:

1. Press the **Direct To** ⚟► to show the Goto Page. Or, open the Active Route Page. Press **MENU** to open the options menu.
2. Highlight **Cancel Approach**, and press **ENTER** to cancel the entire approach. If you enabled Vectors, highlight **Cancel Vectors**, and press **ENTER** to navigate directly to the FAF.

Finding Points on Land

To take full advantage of the trip-planning capabilities of the GPSMAP 196, you can find points on the land and then create a turn-by-turn route (auto-route) to that point. For example, you can find a restaurant to eat dinner at when you land.
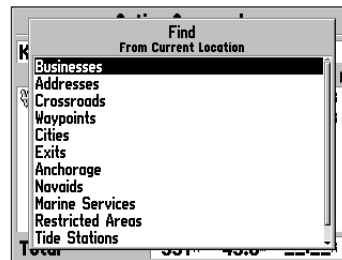
To Find Land Points:

1. Press the **Direct To** ⊅► to show the Goto Page.

2. Press **MENU** to open the options menu.
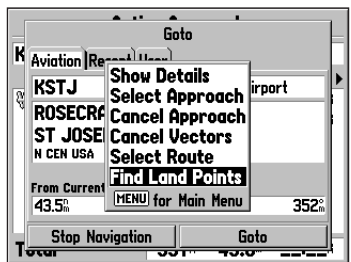
Goto Page Options Menu

3. Highlight **Find Land Points**, and press **ENTER**. The Find Menu opens.

Find Menu

4. Press **MENU** to select the search category, and press **ENTER**.

5. Highlight the find menu icon for the category, and press **ENTER**.

6. Enter the necessary information, such as the restaurant name and press **ENTER**. Refer to "Finding an Item" on page 51 for complete information.

7. Select **Save** to save the location as a waypoint to use later when creating a route. Select **Show Map** to show the location on the map, or select **OK** to return to the search results list.

Marking a Waypoint

Waypoints are locations or landmarks you record and store in your GPSMAP 196. Press the **ENTER/MARK** to capture your present location to create a new waypoint. You must have a valid 2D or 3D satellite fix to mark your location. Press **MENU** twice and open the GPS tab to view your satellite receiver status.

For more information about editing waypoints, see the "Editing and Managing Waypoints" section beginning on page 66.

To mark your present location:
1. Press and hold **ENTER/MARK** until the Mark Waypoint Page appears.
2. To accept the waypoint with the default name ("Waypoint"), use the **ROCKER** to highlight **OK**, and press **ENTER**.

To mark a selected location as a waypoint:
1. Press **PAGE** to open the Map Page.
2. Use the **ROCKER** to move the arrow to the location you want to save as a waypoint.
3. Quickly press and release **ENTER/MARK** to open the Information Page for the map item.
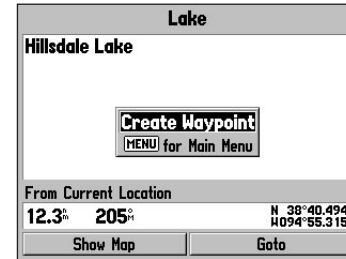
Saving the selected item as a waypoint

4. To save the waypoint, press **MENU**, highlight **Create Waypoint**, and press **ENTER**.
5. To accept the waypoint with the default name, highlight **OK**, and press **ENTER.**

Creating a Flight Plan (Route)

You can create a Flight Plan (or route) using the Route Page in the Main Menu. The Route is then saved for future use. You can also create a route using the Active Route Page for immediate use. For more information, refer to "Creating Routes" beginning on page 52 and "Editing and Managing Routes" beginning on page 62.

> ⚠ *NOTE: After you perform an update to your Jeppesen Database, verify that all of your flight plans in your unit are still current. If there is an obsolete Jeppesen aviation point in a saved route, the route is locked and unusable. You need to create a new route with current Jeppesen Database points.*

To create a route:

1. Press **MENU** twice to open the Main Menu.
2. Use the **ROCKER** to highlight **Routes**, and press **ENTER**.
3. Press **MENU** to show the options menu. Use the **ROCKER** to highlight **New Route**, and press **ENTER**, or highlight the first blank line, and press **ENTER**.
4. Press **MENU** to show the options menu. Use the **ROCKER** to highlight **Add Waypoint**, and press **ENTER**.
   Or
   Highlight the first blank line, and press **ENTER**.
5. The Aviation Find Page (Goto Page) opens allowing you to select an aviation point. Enter the ID, Facility name, or city.

6. Highlight the point in the list. Highlight **OK**, and press **ENTER**. The selected point is added to the route.

Highlight a blank line and press **ENTER** to continue adding waypoints.

7. Repeat steps 4 through 6 until all points are added to the route. The route is automatically saved to the unit's memory.

To navigate a saved route:

1. Press **MENU** twice to open the Main Menu.
2. Use the **ROCKER** to highlight **Routes**, and press **ENTER**.
3. Highlight the route you want to take from the list, and press **MENU**.
4. Highlight **Activate Route**, and press **ENTER**.

You can also create a flight plan to use at a later time. For more information, refer to "Creating Routes" beginning on page 52 and "Editing and Managing Routes" beginning on page 62.

Following your Flight Plan

When you have created and started your flight plan (or route), the GPSMAP 196 guides you to the destination using a variety of tools.

> *NOTE: After you perform an update to your Jeppesen Database, verify that all of your flight plans (routes) in your unit are still current. If there is an obsolete Jeppesen aviation point in a saved route, the route is locked and unusable. You need to create a new route with current Jeppesen Database points.*

Track Your Progress on the Map Page

On the Map Page, your current location is shown as an airplane (when in Aviation Mode). You can see how the airplane moves across the map; this is a graphic view of your flight. Your route is marked with a dark line. The airplane should be on top of the dark line as you move. When you are on the dark line, you are directly on course.

> *NOTE: In Aviation (and Water) Mode, the Goto line and navigation guidance are fixed. The From point is the location where the Goto was initiated. In Land Mode, the Goto line on the map is constantly updated to your present location.*

For complete information about the Map Page and the features of the Map Page, see "Map Page," beginning on page 28.

View the HSI on the Panel Page

You can use the Panel Page to view the HSI, your bearing to the course, and other information such as speed, altitude, and ETA.

Use the compass in the center of the page to determine if you are on the proper course. Also, you can help keep the aircraft within the VNAV profile when viewing the VNAV indicator.

For complete information about the Panel Page, see the "Panel Page" section beginning on page 36.

Alerts

As you travel, a variety of alerts appear on your current page, such as Airspace, and Obstacle. When an Airspace Alert pops up, press **NEAREST** to view the Airspace Information.

Aviation Mode Pages

This section discusses the major pages, as well as some additional aviation features, such as E6B.

Map Page

The GPSMAP 196 features a real-time moving map that can do much more than just plot your course. The Map Page shows map information (digital cartography) that includes airspace boundaries, airports, navaids, lakes, rivers, coastlines, cities, and highways. Dedicated zoom keys (**IN** and **OUT**) are provided for range adjustments.

Two basic map operating modes, location mode and pan mode, determine what cartography is shown on the Map Page. Location mode pans the map to keep your present location in the screen area. The location marker (icon) that shows your travel on the Map Page is an aircraft symbol ✈ in Aviation Mode and a triangle symbol ▲ in Water and Land Modes. The GPSMAP 196 always turns on in location mode, with the last known location centered on the map. When you press the **ROCKER**, the GPSMAP 196 enters pan mode, which moves the map to keep the white arrow ▷ (map pointer) within the screen area.

In Aviation Mode, by default, four user-selectable data fields with a RMI appear on the right side of the screen. The data fields can be configured to show any one of the several data options. You can also change the layout of the map and data fields, see page 34 for information.

Map Page (Aviation Mode)

Airports

Current Location

Map Zoom Range
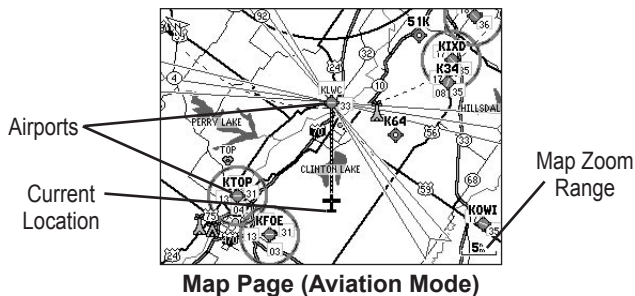
Map Orientation

There are three map orientation options: North Up orients the map like a paper map, Track Up orients the map in the direction of travel, and Course Up orients the map in the direction of the destination. When using Track Up or Course Up, the North arrow indicates the orientation. To change the map orientation, press **PAGE** to open the Map Page. Press **MENU**. Select **Map**, and press **ENTER**. Refer to page 33 for information.

Zooming In and Out of the Map

The Map Page has 28 available range scales from 20 ft to 800 nm (20 ft to 800 mi or 5 m to 1200 km). The map range is controlled by the **IN** and **OUT** keys, with the current range shown at the bottom right of the data window.

> *NOTE: The range value represents the distance between the ends of the range bar ( ).*

To select a map zoom range (zoom in and out):
• Press the **OUT** key to zoom out.
• Press the **IN** key to zoom in.

The system has a built-in worldwide database to 20 mile zoom range, with more detailed coverage available through the use of the Jeppesen, BlueChart, or MapSource data.

Map coverage conforms to the following conditions:

• Cartography is shown when the selected zoom range is covered by either the internal basemap or other MapSource data loaded onto a data card.

• When the selected zoom range is covered by both the internal database and data card map information, the cartography with the best resolution is shown.

• When the selected zoom range exceeds the resolution of the data in use, "overzoom" appears below the map range.

No additional data is available

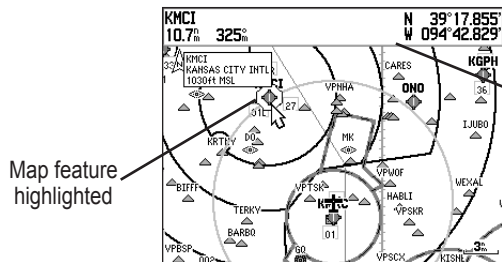• When external data (such as MapSource data) is used, "map card" appears below the map range.

Using detailed maps loaded on the data card

Panning the Map

The panning arrow ▷ allows you to pan the map to show other map areas. As you pan past the edge of the current map, the screen moves to provide continuous map coverage.

To pan the map:
Press up, down, right, or left on the **ROCKER**. The panning arrow moves the map so you can view different parts of the map.

Panning Arrow data window: Shows the distance and bearing from your present location, and arrow's location coordinates.

Map feature highlighted

Panning the Map

As you move the arrow, the distance and bearing from your present location to the arrow is shown in the data window, along with the arrow's location coordinates. When you zoom in pan mode, the arrow stays centered on the screen. When the arrow is stationary, fixed coordinates appear in the location field, and the distance and bearing from your present location update as you move.

To re-center your location on-screen:
1. When you are finished panning the Map, press **QUIT**.
2. The map automatically moves to show your present location, and the unit returns to location mode.

The arrow can also be used to select on-screen map items, allowing you to review a selected item directly from the map screen.

To view details about an on-screen point:
1. Use the **ROCKER** to move the arrow to the waypoint or map item you want. If there are several items grouped closely together, zoom in closer for a better view.

   When a waypoint or map item is selected, it is highlighted on screen with the name and location shown at the top of the screen, along with the distance and bearing from your current location, as shown in the image to the left.

2.	Press **ENTER** to view more information about the point. The information and on-screen buttons shown vary based on the type of item selected. In some cases, additional information tabs appear at the top of the Information Page or Waypoint Page.

3.	Use the **ROCKER** to highlight the extra tabs and view the information.

4.	Select an on-screen button, and press **ENTER**.

5.	Press **QUIT** to exit the Information Page.

Airport Information Page

Airspace Information

Pan mode can also be used to retrieve information on airspaces depicted on the map.

Information box with airspace name, type, and floor/ceiling limits

Highlighted airspace area
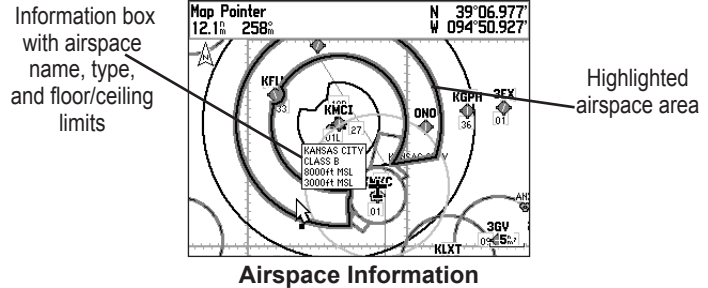
Airspace Information

To retrieve airspace information from the Map Page:

1.	Use the **ROCKER** to select an area within the airspace boundary. The boundary line is highlighted and the airspace type and floor/ceiling limits are shown.

2.	To show additional information, press **ENTER**.

	View communication frequencies by highlighting the on-screen **Frequencies** button, and pressing **ENTER**.

3.	To return the to Map Page, highlight **OK**, and press **ENTER**.

Obstacle Information

Obstacles are shown on the Map Page when the map range is set to 3 nm or below. Standard aeronautical chart symbols are used for lighted or unlighted obstacles taller than 200 feet Above Ground Level (AGL). Refer to the Obstacle Icons legend below.

⚠	Lighted Obstacle 1000 ft AGL and higher.
⚠	Unlighted Obstacle 1000 ft AGL and higher.
⚠	Lighted Obstacle below 1000 ft AGL.
⚠	Unlighted Obstacle below 1000 ft AGL.

Obstacle Icons

Each obstacle is labeled with the altitude of the top of the obstacle, or Mean Sea Level (MSL). Each obstacle also lists, in parentheses, the actual height of the obstacle, or Above Ground Level (AGL).

Light grey symbols indicate that the obstacle is between the user-defined Caution Elevation and 100 feet below the aircraft. Dark grey symbols indicate the obstacle is within 100 feet of the aircraft.

Clearing Unwanted Details from the Map

You can remove items from the map (declutter the screen) to remove unwanted items, such as highways. Aviation Mode has various levels of declutter. To quickly declutter the map, press **ENTER**.

To declutter the Map Page (Aviation Mode only):

1. Press **ENTER**. Background detail, including highways, cities, rivers & smaller lakes, is shown in gray (de-emphasized) on the map to make the aviation data easier to read. This declutter setting is identified by **CLEAR-1** appearing below the map range.
2. Press **ENTER** again. The above background map detail is removed from the Map Page. **CLEAR-2** appears below the map range.
3. Press **ENTER** again. Airspace boundary detail is removed from the Map Page. **CLEAR-3** appears below the map range.
4. Press **ENTER** again. Only the waypoints and navaids which are part of the current Goto or route appear on the Map Page. **CLEAR-4** appears below the map range.
5. Press **ENTER** again to return ALL detail to the Map Page.

Measuring Distance

You can measure the distance and bearing between two map items.

To measure the bearing/distance between two points:

1. From the Map Page, press **MENU** to open the options menu.

2. Highlight the **Measure Distance** option, and press **ENTER**. An on-screen arrow appears on the map at your present location with **ENT REF** below it.

3. Move the arrow to the reference point (the starting point that you want to measure from), and press **ENTER**.

End point of measurement, labeled "ENT REF"

The beginning point of the measurement
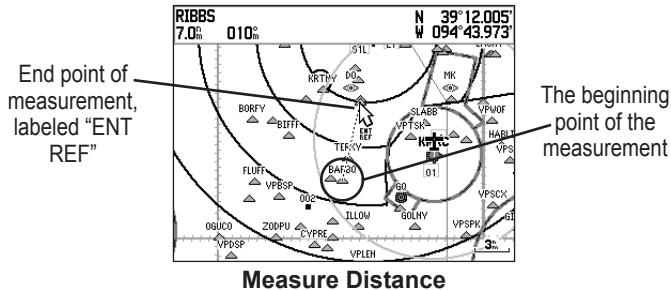
Measure Distance

4. Move the arrow to the point want to measure to. The bearing and distance from the reference point and arrow coordinates appear in the data window at the top of the screen.

5. Press **QUIT** to finish.

Setting Up the Map Page

The Map Page Setup allows you to adjust the way items appear on the Map Page.

To change a map setup option:

1. From the Map Page, press **MENU** to open the options menu.

2. Highlight **Setup Map**, and press **ENTER**.

3. Highlight the **Map** tab, and press **ENTER**.

4. Press left or right on the **ROCKER** to highlight the tab, then up or down on the **ROCKER** to highlight to the field you want to change, and press **ENTER**.
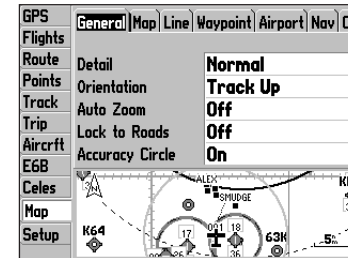
General Tab of the Map Page Setup

5. Press up or down on the **ROCKER** to highlight to the setting, and press **ENTER** to select the new setting.

6. Press **PAGE** or **QUIT** to exit.

Changing the Page Layout and Data Fields

To customize the pages to show what you want, adjust the page layout and data fields.

You can adjust how the following pages look on the screen: Map, Panel, HSI, and Position Data Pages. You can adjust the data fields on many of these pages as well.
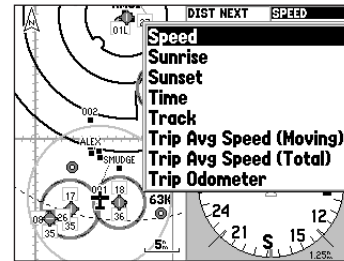
To set up the page layout:
1. Press **PAGE** to show the page you want to change.
2. Press **MENU** to open the options menu.
3. Highlight **Set up Page Layout**, and press **ENTER**.
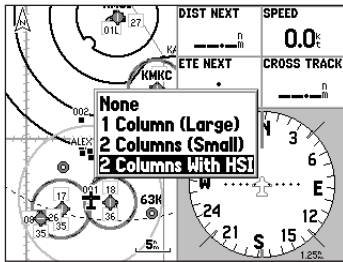
Changing the layout of the Map Page

4. Select the option you want, and press **ENTER**. The options vary between the three usage modes and the page you are setting up.

To change a data field:
1. Press **PAGE** to show the page you want to change.
2. Press **MENU** to open the options menu.
3. Highlight **Change Data Fields**, and press **ENTER**.
4. Move the field highlight to the data field you want to change, and press **ENTER**.
5. Press up or down on the **ROCKER** to highlight the data you want to show, and press **ENTER**.
6. To return the field to the default setting, press **MENU**, and then press **ENTER**.
7. Press **QUIT** to exit.

Changing a Data Field

Additional Map Data

You can view the data that is currently loaded on your GPSMAP 196 unit and data card.

To review or change data card information:

1. Access the Map Page, and press **MENU**.

2. From the options menu, highlight **Map Information**, and press **ENTER**.

Map Family highlighted. Press **ENTER** to view the individual maps in the family.
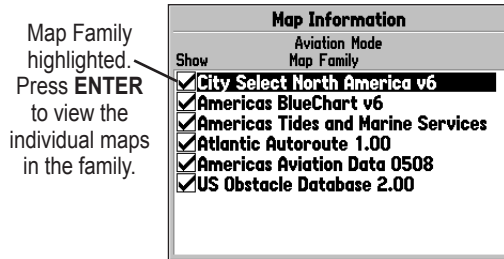
Map Card Information Page

3. The first page shows the Map Families that are stored on the data card and whether they are shown on the Map Page.

   To change the setting for a Map Family, highlight the box next to the Map Family name, and press **ENTER** to select (check mark) or deselect (no check mark) the **Show** setting.

4. To view the list of maps within a Map Family, highlight the name of the Map Family, and press **ENTER**.
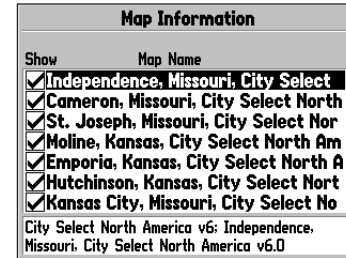
Individual Map Information Page

Showing the individual maps that are in the selected Map Family

5. To view detailed information about an individual map, highlight the Map Name, and press **ENTER**. Highlight **OK**, and press **ENTER** to exit the map information page.

6. To select or deselect individual maps, highlight the box next to a map, and press **ENTER** to check/uncheck the **Show** box.
   Or
   Press **MENU**, and select one of the options (**Show All**, **Hide All**, or **Show Defaults**), and press **ENTER**.

7. Press **QUIT** to exit the Map Information Page.

Panel Page

The Panel Page shows GPS-derived data in a graphical format, similar to an instrument panel. Keep in mind the differences between this page and your mechanical instruments, as your mechanical panel instruments use sensors that provide information different from that derived using GPS. The Panel Page appears only when the GPSMAP 196 is in Aviation Mode.

The Panel Page shows a graphic Horizontal Situation Indicator (HSI) surrounded by additional indicators.

Panel Page
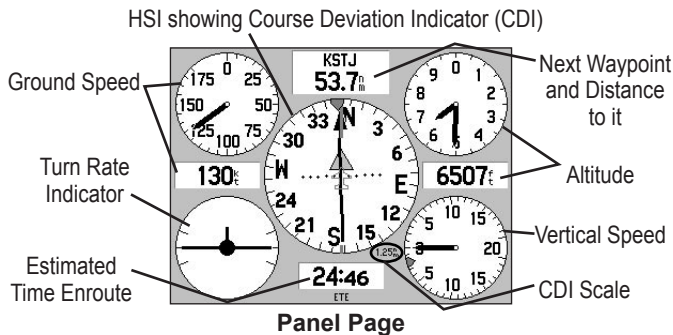
The graphic HSI depicts the course to the destination or the next waypoint in a route, current ground track, off course error, and a To/From indication. The rotating compass indicates your current ground track at the top of the page.

The course pointer and course deviation needle indicate the course and whether you are on the course. A bug indicator provides information to guide you back to the course if you stray off course.

If you move off course, the Course Deviation Indicator, or needle, indicates how far off course you are, left or right, based on its placement along the course deviation scale. To get back on course and center the needle, steer toward the needle.

The course deviation scale setting is adjustable for ±0.25, 1.25 or 5.0 (nautical mile, statute mile, or kilometer) full-scale deflection. The course deviation scale appears on the lower right corner of the HSI.

To change the Panel Page layout:
1. Press **MENU** while on the Panel Page.
2. Highlight **Setup Page Layout**, and press **ENTER**.
3. Select a layout option, and press **ENTER**.

Setting Up the Panel Page

You can set the bug indicator and change the CDI scale to suit your needs.

To set a user-defined bug heading reference:

1. With the Panel Page appears, press **MENU** to show the Panel Page options menu.

2. Highlight **Set Bug Indicator**, and press **ENTER**.

3. Highlight **User Selected**, and press **ENTER**. A window appears at the center of the HSI, showing the current bug indicator setting.

4. Select the heading reference by pressing left or right on the **ROCKER**. Press **ENTER**. The bug indicator remains fixed on the selected heading until a new bug heading is chosen.

To change the CDI scale:

1. With the Panel Page shown, press **MENU** to show the Panel Page options menu.

2. Use the **ROCKER** to highlight **Set CDI Scale**, and press **ENTER**. A window appears at the center of the HSI, showing the scale settings.

3. Use the **ROCKER** to select the scale, and press **ENTER**.

Manually Setting a Course

Use the **Set OBS and Hold** option to manually set your course to the destination.

To manually set a course to the destination waypoint:

1. With the Panel Page shown, press **MENU** to show the Panel Page options menu.

2. Highlight **Set OBS and Hold** option, and press **ENTER**. An OBS data field appears on the screen. Keep in mind that you must have a destination waypoint selected.

3. Select the OBS course by pressing the **ROCKER** left and right. Press **ENTER**. The course deviation needle and course pointer now provide steering guidance to the selected course.

   To release the waypoint hold and return to automatic sequencing of route waypoints, press **MENU**. Highlight **Release Hold**, and press **ENTER**.

   To cancel the OBS course and reset a direct course to the waypoint, press **Direct To**, highlight **Resume Route**, and press **ENTER** to re-start the route.

VNAV (Vertical Navigation)

The VNAV sub tab in the Main Menu provides settings for the vertical navigation feature. These settings create a three-dimensional profile that guides you from your present location and altitude to a final (target) altitude at a specified location.

When the VNAV profile is defined, message alerts help keep you informed of your progress. The bar on the HSI on the Panel Page shows your VNAV profile.
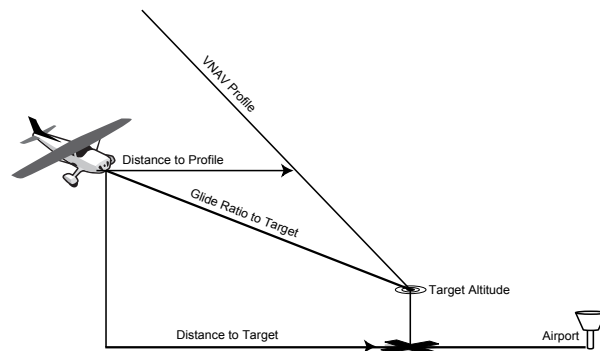
To use the vertical navigation feature, your ground speed must be greater than 35 knots and you must be navigating a Goto or a route.

The "Approaching VNAV Profile" message appears one minute prior to the initial descent point. The descent angle locks to prevent changes in speed from altering the profile. The VNAV feature does not take into account any changes in groundspeed that occur during the transition from level flight to descent or climb.

At 500 ft above the target altitude, the "Approaching Target Altitude" message appears, the time to vertical navigation goes blank, and the VNAV indicator disappears from the Panel Page.

⚠️ **CAUTION:** *The GPSMAP 196 is a VFR navigation tool and should not be used to perform instrument approaches. VNAV is only a VFR navigation aid and is not intended for instrument approaches.*

Visual representation of VNAV

Using the VNAV Feature

Use the VNAV (Vertical Navigation) feature to ensure that you are flying at the proper altitude. The VNAV Indicator appears on the HSI (Panel Page) as a horizontal bar, as shown in the image on the next page. A message appears when you are approaching the VNAV Profile. When the bar is in the vertical center of the HSI, you are at the proper altitude for the VNAV Profile. Make sure **VNAV Indicator** is **On** in the options menu. From the Panel Page, press **MENU** to open the options menu. Select **Capture VNAV Profile**, and press **ENTER** to center or re-center the VNAV indicator on the graphic HSI. You must have entered a valid vertical navigation profile and be navigating.
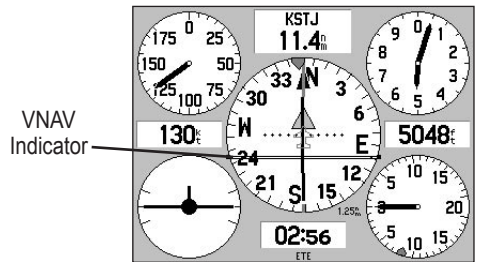
VNAV Indicator

Panel Page showing the VNAV Indicator

Setting up VNAV

To open the VNAV tab, press **MENU** twice to open the Main Menu. Select **Setup** from the vertical tab list. Then select **VNAV** from the row of tabs along the top of the page.

The VNAV Waypoint automatically changes to your destination after you begin navigating to a destination.

VNAV Sub Tab

Target Altitude—enter the altitude you want to be at when you reach your target location. Select **Above Waypoint** to use field elevation for airports in the Jeppesen database or **Above MSL** to specify an exact MSL altitude target.

By—defines the target location with settings of distance **Before** or **After** a reference waypoint (the final destination airport). To set a target location at a reference waypoint, enter a distance of zero.

VNAV Waypoint—allows you to select any waypoint along the currently active route (or Goto) as your reference waypoint. The reference waypoint defines the target location.

VNAV Profile—allows you to select the descent rate.

VNAV Messages—enables and disables VNAV alert messages.

Active Route Page

Whenever you start a route (flight plan) or initiate a Goto while in Aviation or Water Mode, the Active Route Page shows each point (waypoint or map item) of the active route, with the point name, Course, Distance, and several other fields of information. The current destination point, the active point, is marked with an arrow. As you navigate a route, the list automatically updates to indicate the active point first. The Active Route and Route Review Pages share many of the same features and options.

Press **PAGE** repeatedly to open the Active Route Page.

Active Route Page

NOTE: *If you have created a route (Flight Plan) with a Jeppesen point that is no longer current after you perform an update to your Jeppesen Database, the route is locked. You need to create a new route with current Jeppesen Database points.*

Active Route Page Options

Press **MENU** while on the Active Route Page to open the options menu. You can edit the route using many of the options in the menu such as **Edit on Map** (see page 65 for information), **Add Waypoint**, and **Invert**. You can also change the data fields to suit your needs.

You can also select an approach for your landing and set your fuel flow (or plan your route, based on your current Usage Mode):

Select Approach—(Aviation Only) allows you to select the final course segment of a published approach, replacing the final destination airport in a Goto or route with the sequence of waypoints for the selected approach. The approaches provide only the final course segment, usually from final approach fix (FAF) to missed approach point (MAP), and are based on existing GPS, RNAV, VOR, NDB, localizer, or ILS approach procedures. All approach procedures are flown as a sequence of waypoints in the route. To select an approach and add the waypoints to the route, the final destination in the Goto or route must be an airport with a published approach.

Set Fuel Flow (Plan Route)—allows you to enter information about your aircraft and route.

Position Data Page

The Position Data Page provides a quick reference for the important data you want to show while navigating a route in Aviation and Water Modes. The default page shows a compass ribbon, your current latitude and longitude, the current date and time, battery or external power indicator, and eight user-selectable data fields. The compass ribbon is shown at the top of the page to show your current heading with a dark, vertical bar. To stay on course, steer toward the gray bar (or arrows) until it is aligned with the dark bar.

Press **PAGE** repeatedly to open the Position Data Page.

Position Data Page

Position Data Page Options

With the Position Data Page open, press **MENU** to open the options menu. You can set up the layout of the page and change the data fields. For an explanation of the data fields, refer to page 112 in the "Appendix." You can also select one of the following options:

Reset Trip—clears trip information, except the maximum speed and the odometer.

Reset Max Speed—clears the maximum speed.

Reset Odometer—clears the running total of the distance traveled since the odometer was last reset.

Reset All—clears all trip information including the maximum speed and odometer.

Flight Log

The Flights tab shows a list of any recorded flights, including date, route of flight, and flight time. The GPSMAP 196 saves up to 50 recorded flights while in Aviation Mode. Entries on this list are automatically created for each flight.

The bottom of the Flights tab shows the time of your last flight. This resets if you select **All Unit Defaults** from the System tab options menu.

An optional FlightBook software package is available to further simplify your flight record keeping. For details about FlightBook, visit the Garmin Web site at http://www.garmin.com/aviation.

Viewing the Flight Log

Recording begins when your speed exceeds 30 knots and you gain 500 feet of altitude. The **Route of Flight** field uses the nearest airport as the departure airport. The destination airport is continuously updated as your flight progresses.

If you land and groundspeed drops below 30 knots, the flight entry is saved and a new entry is recorded when you depart the airport. A touch-and-go or brief stop of less than 10 minutes appends to the current flight record, rather than starting a new entry.

Select any listed entry in the log to view additional information.

To view details for a flight:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Flights** from the vertical menu of tabs.

3. Press **MENU** and select **Show Hours and Minutes** to view the flights in minutes and hours, if you prefer.

4. Highlight the flight, and press **ENTER**. The flight details window opens.

5. With **OK** highlighted, press **ENTER** to return to the **Flights** tab.

Deleting Flight Records

You can delete the highlighted flight record (**Delete Flight**) or delete all flight records from the Flight Log (**Delete All**). To delete flights, press **MENU** (with the Flights tab information shown). Use the **ROCKER** to highlight a menu option, and press **ENTER**.

Aircraft Information

The Aircraft tab is divided into two sub tabs: Aircraft Profile and Weight & Balance.

To open the Aircraft tab of the Main Menu:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Aircraft** from the vertical list of tabs.

3. Press the **ROCKER** right or left to highlight either the **Aircraft Profile** sub tab or the **Weight & Balance** sub tab from the top of the screen.
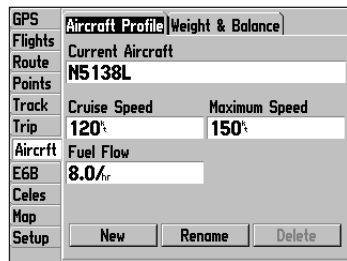
Aircraft Profile Tab

Entering Your Aircraft Profile

The Aircraft Profile sub tab allows you to profile cruising speed, maximum speed, and fuel flow. The unit can save up to 10 aircraft profiles.

Cruising speed and fuel flow are used as default settings when viewing trip planning information on the Route Review Page. The maximum speed is used to define the range for airspeed on the Panel Page and is automatically updated if you exceed this figure.

To enter an aircraft profile:

1. From the Aircraft Profile tab, use the **ROCKER** to highlight the on-screen **New** button, and press **ENTER**.

2. Highlight the **Current Aircraft** field, and press **ENTER**. Or, highlight the **Rename** button, and press **ENTER**.

3. Use the **ROCKER** to enter the aircraft tail number (or other identifying information) in the **Current Aircraft** field. Press **ENTER** when finished.

4. Use the **ROCKER** to enter information for the cruising and maximum speeds for your aircraft, and your aircraft's fuel flow.

To select a saved aircraft profile:

1. From the **Aircraft Profile** tab, use the **ROCKER** to highlight the **Current Aircraft** field, and press **ENTER**.

2. Use the **ROCKER** to select the aircraft profile, and press **ENTER**.

To rename or delete a saved aircraft profile:

1. From the **Aircraft Profile** tab, use the **ROCKER** to highlight the **Current Aircraft** and to select the profile you want to rename.

2. Use the **ROCKER** to select the on-screen **Rename** or **Delete** button, and press **ENTER**. If **Rename** is selected, use the **ROCKER** and **ENTER** keys to enter a new tail number.

Calculating the Weight & Balance

Weight & Balance may be used during your pre-flight preparations to verify the weight and balance conditions for your aircraft. By entering the weight and arm values on this page, the GPSMAP 196 can calculate the total weight, moment, and center of gravity (CG) to ensure a safe flight.

Before entering the various figures, you need to determine the empty weight of the airplane and the arm (or "station") for each weight entered. These figures should be determined using the pilot's operating handbook for your airplane, which also notes the weight limitations and fore/aft CG limits. Compare those figures to the values calculated by the GPSMAP 196.

To perform weight and balance calculations:
1. Press **MENU** twice to open the Main Menu.
2. Highlight **Aircraft** from the vertical list of tabs.
3. Press the **ROCKER** right to highlight **Weight & Balance**.

Weight & Balance Tab

4. Highlight the weight field, and press **ENTER**.
5. Use the **ROCKER** to enter the weight figure. Press **ENTER**.
6. Change the weight units. Highlight **lbs**, and press **ENTER**. Select **Kgs**, and press **ENTER**.
7. Highlight the corresponding **ARM** field, and press **ENTER**.
8. Use the **ROCKER** to enter the arm figure. Press **ENTER**.
9. Repeat steps 4 through 8 until all figures are entered. The calculated moment, weight, and CG figures appear at the bottom of the page. Keep in mind that the "Aircraft" (empty weight/arm) figures must be entered as a reference to calculate a valid moment, weight, and CG.
10. To empty the aircraft, press **MENU**, select **Empty Aircraft**, and press **ENTER**.

> *NOTE: This information is only for flight planning purposes. Consult your aircraft's pilot handbook for the official weight and balance data.*

E6B Tab

The E6B tab in the Main Menu calculates Density Altitude, True Airspeed, and Winds Aloft (Head Wind, Tail Wind, Wind From, and Wind Speed), based on information you enter.

To open the E6B tab of the Main Menu:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **E6B** from the vertical list of tabs.

Calculated Figure

Calculated or User-Entered Figure

Calculated Figures

E6B Tab

Indicated Altitude—required entry for density altitude/true airspeed calculation. Enter the aircraft's altimeter reading.

Calibrated Airspeed—required entry for density altitude/true airspeed calculation. Enter the aircraft's airspeed indicator.

Heading—required entry for winds aloft calculation. Use heading from the aircraft's heading indicator or directional gyro.

Wind From—(calculated figure) determined from entry of heading and true airspeed.

True Airspeed—(calculated or user-entered figure) determined from entry of calibrated airspeed, baro pressure, and total air temperature. Also can be entered directly for winds aloft calculations.

Baro Pressure—required entry for density altitude/true airspeed calculation. Use current altimeter setting (barometric pressure).

Total Air Temp—required entry for density altitude/true airspeed calculation. Total Air Temperature (TAT) is the temperature of the air including the heating effect caused by speed. The temperature reading on a standard outside air temperature gauge found on most piston aircraft is TAT.

Head Wind—(calculated figure) determined from entry of heading and true airspeed.

Wind Speed—(calculated figure) determined from entry of heading and true airspeed.

Density Altitude—(calculated figure) determined from entry of indicated altitude, barometric pressure and total air temperature.

To calculate true airspeed and density altitude:

1. From the **E6B** tab, highlight the **Indicated Altitude** field (at the top of the page), and press **ENTER**.

2. Use the **ROCKER** to enter the altitude shown on your altimeter. Press **ENTER** when finished.

3. Repeat steps 1 and 2 to enter the **Calibrated Airspeed**, **Baro Pressure,** and **Total Air Temperature**. (For **Calibrated Airspeed**, use the speed shown on your airspeed indicator. Use the current altimeter setting for **Baro Pressure**. **Total Air Temperature** is the temperature of the outside air including the heating effect caused by speed. For most aircraft, this is the temperature reading on a standard outside air temperature gauge.) The calculated figures for **True Airspeed** and **Density Altitude** are shown in the designated fields.

Calculated Figure

Calculated or User-Entered Figure

Calculated Figures

E6B Tab

To calculate winds aloft:

1. Follow the steps in the previous procedure to determine true airspeed.
   Or
   Use the **ROCKER** and **ENTER** keys to manually enter a true airspeed figure in the **True Airspeed** field.

2. Use the **ROCKER** to highlight the Heading field, and press **ENTER**.

3. Use the **ROCKER** to enter the aircraft heading shown on your directional gyro or compass. Press **ENTER** when finished.

   The calculated figures for Head Wind, Wind From, and Wind Speed appears.

> *NOTE: If a True North reference is currently selected as the heading reference on your GPSMAP 196, you must enter Heading using a True North reference to determine winds accurately.*

To restore defaults on the E6B tab:

1. Open the **E6B** tab on the Main Menu.

2. Press **MENU** to open the options menu.

3. Highlight **Restore Default**, and press **ENTER**.

# BASIC OPERATION IN LAND MODE

To switch usage modes:
1. Press and hold **PAGE**.
2. Use the **ROCKER** to select Aviation, Land, or Water, and press **ENTER**.

Land Mode Page Sequence

Land Mode features three main pages: the Map, Compass, and Postion Data Pages. Two additional pages appear during active navigation while in Land Mode—a Current Route Page appears if you are navigating a turn-by-turn route, and an Active Route Page appears if you are navigating "Off Road." See "Navigating in Land Mode" beginning on the next page for more information.
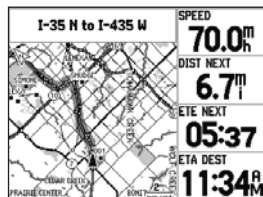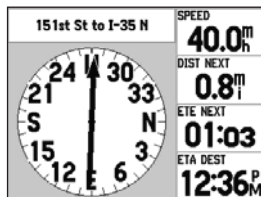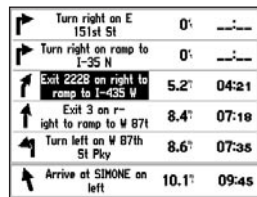
Map Page	Compass Page	Current Route Page	Postion Data Page
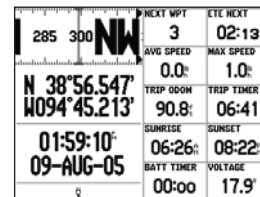
Navigating in Land Mode

Land Mode and Water Mode are similar. Most of the features discussed here also apply to Water Mode.

There are several ways to begin navigating to a point in Land Mode:

- Select a point on the map and press the **Direct To** ᴆ►.
- Press **NRST/FIND** to search for a particular item and create a route to it.

You can also start a saved route through the Routes tab of the Main Menu. For more information, refer to .

To goto a highlighted map item:

1. Use the **ROCKER** to highlight the item you would like to navigate to on the Map Page.
2. Press **Direct To** ᴆ►. **Go To <point name>** is added to the list of options and automatically highlighted. If you have selected an area of the map that is not a map feature, **Go To MAP Point** is listed. Select **Go To <point name>** or **Go To MAP Point**, and press **ENTER**.
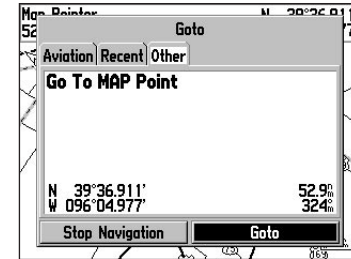

Navigate Options in Land Mode

3. Follow the route line created on the Map Page or the turn-by-turn route (auto-route) by using the Current Route Page.

To start new route using the Find Menu:

1. From the Find Menu, highlight **Waypoints**, and press **ENTER**. (You can also choose to Goto other points, such as **Cities** or **Services** from this list. The steps vary only slightly from those listed for **Waypoints**.)

2. Select a waypoint from the list, and then press **ENTER** to show the Review Waypoint Page. The Review Waypoint Page automatically opens.
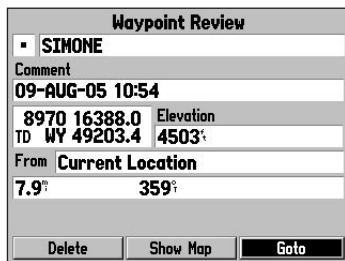

Waypoint Page

Activating a Goto using the Find Menu

3. With the **Goto** button highlighted, press **ENTER** to begin navigation.

To search for an item and route to it:

1. Press the **NRST/FIND** to open the Find Menu.

2. Using the **ROCKER**, highlight a category, such as **Cities**, and press **ENTER**.

3. Press **ENTER** and use the **ROCKER** to begin entering the letters contained in the item name. The list begins to sort by the items that start with the letters you are entering. Press **ENTER**.
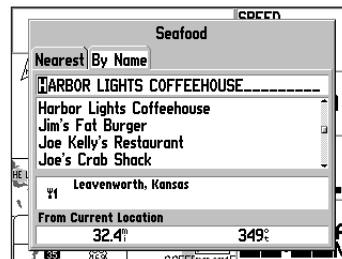
Finding an item using the **By Name** field: The unit searches for items starting with the letter combination you enter and shows them in the list.

4. Highlight an item from the list, and press **ENTER**.

5. Highlight the **Goto** button, and press **ENTER**.

For complete information about finding an item, refer to the following section.

Finding an Item

The Find Menu allows you to easily search the stored waypoints and points of interest. You can access the Find Menu by pressing **NRST/FIND**.

The Find Menu is comprised of several default categories: Waypoints, Cities, Exits, Aviation Points, Transportation, and Tide Stations. Additional categories appear based on the optional BlueChart or MapSource data card in the unit.
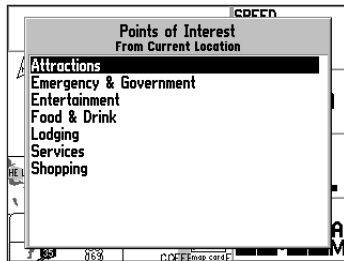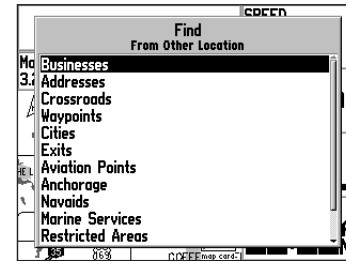

Find Menu

Follow the directions on the previous page to search for an item near your current location and then route to it.

Using the Find From Feature

The Find option also supports a "find from" feature that allows you to center your search around an item that you have just found.

To find an item from another location on the map:

1. Open the Map Page. Use the **ROCKER** to pan the arrow (pointer) to the location you want, and press **NRST/FIND**.

Find From Map Pointer

2. The Find Menu opens showing "From Other Location." The list of items is sorted to show items nearest the selected location. Using the **ROCKER**, highlight the category you want from the list, and press **ENTER**.

3. Using the **ROCKER**, highlight an item from the list, and press **ENTER**. The item's information page automatically opens, allowing you to save the item as a waypoint, show the item on the map, or automatically create a route to (Goto) the item.

Viewing the Information Page

Each item on the map and each item listed in the Find Menu results list has an information page.

To view details about an item:

1. Highlight a point on the map or in the search results list, and press **ENTER**.

   An Information Page appears with details about the item in a tabbed format. Based on the type of item, additional options are available for viewing the item on the Map, viewing a tide chart, viewing the list of maps on your data card, and viewing the next item in the search results list.


Information Page

2. Press **PAGE** or **QUIT** to exit the information page. You can also highlight one of the on-screen buttons, and press **ENTER** to perform that operation.

Creating Routes

The GPSMAP 196 lets you create and store up to 50 reversible routes, with up to 50 waypoints each.

Routes can be created in two ways. The first way is to select waypoints from the Find Menu, allowing you to see a list of the route points as you create the route. The second way is by selecting waypoints or map items from the Map Page, allowing you to see each route point graphically on-screen as you create the route.
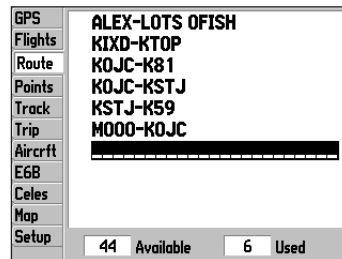
Route Tab

To create a route using the Find Menu:

1. Press **MENU** twice to show the Main Menu.

2. Use the **ROCKER** to highlight **Route** from the vertical list of tabs.

3. Press **MENU** to show the Route options menu. Select **New Route**, and press **ENTER**. Or, highlight the first available blank route slot and press **ENTER**. The Route Review Page automatically opens, showing a blank route.

4. Press **ENTER** to find items to add to the route.

5. The Find Menu opens (based on which Usage Mode you are in). Using the methods discussed in the "Finding an Item" section beginning on page 51, select a point to add to your route. When you find an item, highlight **OK**, and press **ENTER** to add the point to the route. Repeat until you have added all of the points to the route.
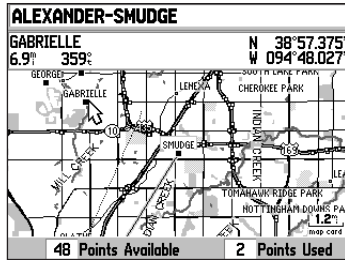

Creating a new route on Route Review Page

To create a route graphically:

1. Press **MENU** twice to show the Main Menu. Use the **ROCKER** to highlight **Route** from the vertical list of tabs.

2. Press **MENU** to show the Route options menu. Select **New Route**, and press **ENTER**.

3. Highlight the first blank slot in the Route List Page, and press **MENU**. Use the **ROCKER** to highlight **Edit on Map**, and press **ENTER**.

4. Use the **ROCKER** to highlight the location, and press **ENTER**. Press **MENU** and select **Append To Route**.

   If you select an area of the map that is not a feature or waypoint, a new waypoint is created for that location. Press **ENTER** on the New Waypoint Page to save the location as a waypoint and continue adding points to your route. You can edit the properties of this waypoint as you can with any waypoint.

Creating a new route on the map

5. Repeat until you have added all points to the route.

6. When finished, press **QUIT** twice to return to the Route Review Page.
   Or
   Press **MENU**, highlight **Edit as Text**, and press **ENTER** to view the Route Review Page.

To follow a saved route in Land Mode:

1. Press **MENU** twice to show the Main Menu. Use the **ROCKER** to highlight **Route** from the vertical list of tabs.

2. Highlight the route you want to start, and press **MENU**.

3. Highlight **Activate Route**, and press **ENTER**. The Active Route Page opens.

4. Press **MENU**. Highlight **Follow Roads**, and press **ENTER**. The GPSMAP 196 automatically generates a turn-by-turn route following roads.

If you want to follow roads on your route, press **MENU** and select **Follow Roads** on the Active Route Page.

Creating Waypoints

Waypoints are locations or landmarks you record and store in your GPSMAP 196. Save your current location as a waypoint by pressing and holding **ENTER/MARK**. You can also find waypoints using the map or Find Menu and them store them in the unit.

The GPSMAP 196 stores up to 1,000 alphanumeric waypoints with a user-defined icon, comment, altitude, and depth available for each waypoint. Waypoints can be created using three basic methods:

- **ENTER/MARK** —allows you to quickly mark your present location.
- **Graphically**—allows you to define a new waypoint location from the map show using the **ROCKER**.
- **Text Entry**—allows you to enter a new waypoint's location coordinates manually.

Marking Your Present Location

The **ENTER/MARK** key lets you quickly capture your present location to create a new waypoint. You must have a valid location (2D or 3D) fix to mark your present location. You can determine the satellite fix by looking at the **GPS** tab on the Main Menu.

To mark your present location:

1. Press and hold **ENTER/MARK** until the New Waypoint Page appears, then release it. A default three-digit name and symbol are assigned for the new waypoint.

New Waypoint Page

2. To accept the waypoint with the default information, use the **ROCKER** to highlight **OK**, and press **ENTER**.

3. To change any information on the New Waypoint Page, highlight the appropriate field, and press **ENTER**. After entering and confirming your changes, highlight **OK**, and press **ENTER**.

Creating Waypoints From the Map

You can create a waypoint using the Map Page. When you pan the map and move the arrow over a map item, a highlighted description of that item appears. The GPSMAP 196 uses the map item text shown on the map as the default name and symbol for the new waypoint.

To create a new waypoint using the Map Page:

1. Press **PAGE** until the Map Page appears.

2. Use the **ROCKER** to move the arrow to the map location, or map feature.

3. Press and quickly release **ENTER/MARK** to capture the arrow location. Pressing and holding **ENTER/MARK** marks your present location, not the arrow's location. The New Map Waypoint Page appears.

   If you have highlighted a map feature, an information page appears after you press **ENTER**. Use the **ROCKER** to highlight **Save,** and press **ENTER** to save the item as a waypoint.
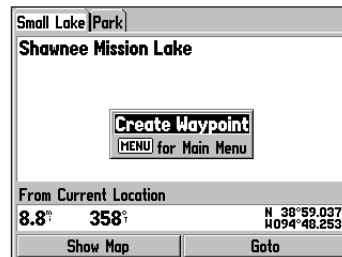
Map Feature Information Page
Select **Save** to save the map feature as a waypoint

4. To accept the waypoint with the default information, highlight **OK**, and press **ENTER**.

   To change the any information on the New Map Waypoint Page, highlight the appropriate field, and press **ENTER**. After entering your changes, highlight **OK**, and press **ENTER**.

Creating a Waypoint by Entering Coordinates

You can manually enter location coordinates to create a waypoint. This method can be useful for creating a waypoint at a specific latitude/longitude location from a chart. You can manually change the location coordinates in the New Waypoint Page to create a new waypoint or use the **Create Waypoint** selection in the User Points tab options menu.

To create a new waypoint by entering location coordinates:

1. Press **ENTER/MARK** to create a waypoint (or use your favorite method discussed in previous sections). The new waypoint is created with the next available waypoint number and the receiver's last known location as the default location.

2. On the New Waypoint Page, use the **ROCKER** to highlight the **Location** field, and press **ENTER**. Use the **ROCKER** to enter the location coordinates, and press **ENTER** when finished.

3. To change any of the other information, highlight the appropriate field, and press **ENTER**. Use the **ROCKER** to enter the new information.

4. After entering your changes, highlight **OK**, and press **ENTER**.

To change the location of a waypoint, highlight the character you want to change in the **Location** field. Press up or down on **ROCKER** to change the character. Repeat until the new location is entered.

Following a Land Route

The GPSMAP 196 guides you to your destination using many tools, such as the Map Page and Current Route Page.

Track Your Progress with the Map Page

You can track the progress of your route on the Map Page. Your route is shown with a route line. The next turn appears in the top bar on the Map Page.
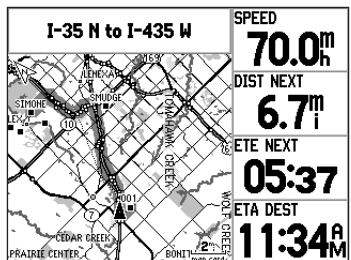
Map Page Showing Your Route

Current Route Page in Land Mode

Whenever you have started a turn-by-turn route in the GPSMAP 196 set in Land Mode, the Current Route Page shows each turn of the active route, with the distance to the turn, the street name, and estimated time to arrival and time of arrival. As you navigate a route, the next turn appears at the top of the list.

Current Route Page

Starting and Stopping Navigation

Press **MENU** to open the Current Route menu. Highlight **Stop/Resume Navigation**.

Land Mode Pages and Features

This section discusses the major pages in Land Mode, such as the Map Page, as well as some additional features, such as routes and points.

Map Page

Refer to in the "Aviation Mode Pages" section for more details about the Map Page.

The location marker (icon) that shows your travel on the Map Page is a triangle symbol ▲ in Water and Land Modes. The GPSMAP 196 always turns on in location mode, with the last known location centered on the map. When you press the **ROCKER**, the GPSMAP 196 enters pan mode, which moves the map to keep the white arrow ▷ (map pointer) within the screen area.

In Land Mode, by default, four user-selectable data fields appear on the right side of the screen that can be configured to show any one of the possible data options. The top of the screen shows the GPS status or the route leg. You can also add additional data fields to the page or select a full screen map without data fields.

Current Location

Map Zoom Range

Data Fields
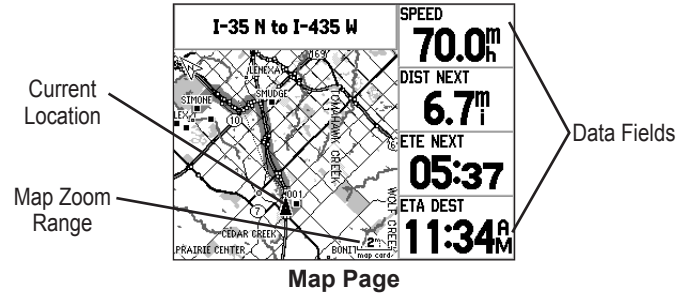
Map Page

Press the zoom keys (**IN** and **OUT**) to change the map range. Some items on the map appear only if the map is zoomed in to a certain level.

Press **MENU** to open the options menu for the Map Page.

Use the **ROCKER** to measure the distance between two objects on the map.

Change the page layout and data fields to customize the Map Page.

Current Route Page

Whenever you have started a route in the GPSMAP 196 in Land Mode, the Current Route Page shows each turn of the active route, with the distance to the turn, the street name, and estimated time to arrival and time of arrival. As you navigate a route, the turn list automatically updates to indicate the next turn at the top of the list.

Current Route Page

You can scroll through the entire list by pressing the **ROCKER** up or down. Highlight any of the turns on the list and press **ENTER** to view the Next Turn Page for that turn. The Current Route and Next Turn Page screen similar information, just in a different layout. The Next Turn Page shows your next turn on a map.
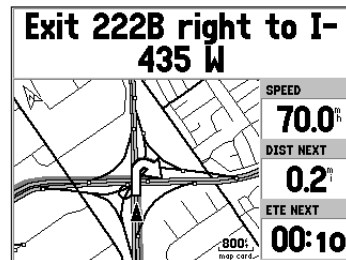
Next Turn Page

Saving the Current Route

You can save the current route from the Current Route Page. Press **MENU** to save the route. Press **ENTER** when **Save Route** is highlighted. Your route is automatically saved, using the starting point and destination as the route name. Highlight **OK** and press **ENTER** to complete saving the route.

Position Data Page

The Postion Data Page provides a quick reference for the important data you want to show while navigating a route in Land Mode. It indicates your current speed and many helpful statistics about your trip, such as bearing, average speed, and moving time.

Reset the Position Data before beginning a trip. If you make frequent stops, leave the GPSMAP 196 turned on to allow the unit to accurately measure elapsed time during the trip.

Trip Computer Page

Position Data Page Options

Press **MENU** while on the Position Data to show the options menu. The following options are available from the Position Data Page. Some options are only available if you have changed the page layout from the default.

Set Up Page Layout—allows you to choose the layout and number of data fields.

Reset Trip—clears trip information, except the maximum speed and the odometer.

Reset Max Speed—clears the maximum speed.

**Reset Odometer**—clears the running total of the distance traveled.

Reset All—clears all trip information including the maximum speed and odometer.

Editing and Managing Routes

The Route tab shows the routes you have created in your GPSMAP 196 unit. For complete information on routes, refer to the "Creating Routes" section beginning on page 52.

Viewing All of Your Saved Routes

The Route tab in the Main Menu lists all of your saved routes and routes on one easy-to-read Route List.
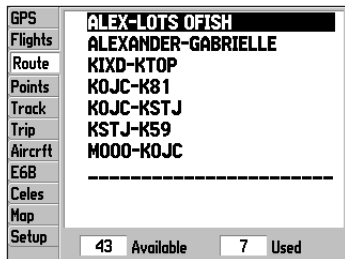
Route Tab

To view the route list:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Route** from the vertical menu of tabs using the **ROCKER**.

Using the Route Options

The Route tab in the Main Menu shows all the routes currently stored in memory, along with a descriptive name for each route. Highlight a route, and press **MENU** to open the options menu. From here you can start the route, copy it, delete it, delete all routes, and create a new route.
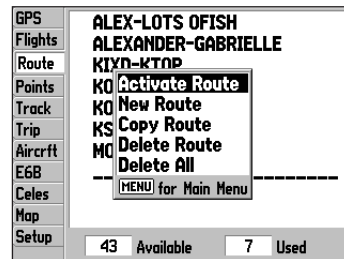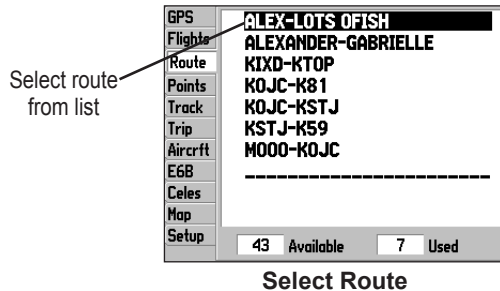

Route Tab Options Menu

Navigating a Saved Route

The Navigate Route option allows you to easily select a saved route. For information about creating routes, refer to the "Creating Routes" section beginning on page 52.

To navigate a route in Land Mode:

1. Highlight the route, and press **ENTER**. The Active Route Page automatically opens with the route started.


Select route from list

Select Route

2. The Active Route Page automatically opens with the route started. Press **MENU** to open the options menu.

3. Highlight **Follow Roads**, and press **ENTER** to create a turn-by-turn route (auto-route), which appears in the Current Route Page.

Editing a Route

When you have created a route, use the Route Review Page to edit, change the name, and review route points of a selected route.

To change the name of the route:

1. Press **MENU** twice, and highlight **Route**.

2. From the Route List Page, use the **ROCKER** to highlight the name of the route, and press **ENTER**.

3. From the Route Review Page, use the **ROCKER** to highlight the route name field at the top of the page, and press **ENTER**.

Enter a new Route name here
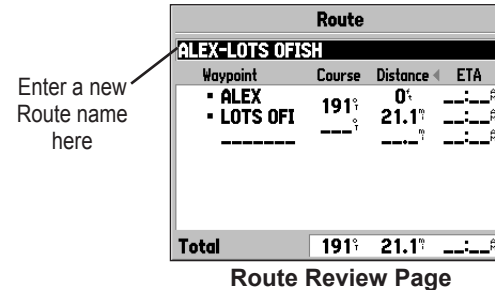
Route Review Page

4. Use the **ROCKER** to enter the route name, and press **ENTER**.

To review individual route points:

1. Press **MENU** twice, and highlight **Route**.

2. Use the **ROCKER** to highlight the name of the route, and press **ENTER**.

3. From the Route Review Page, highlight the point, and press **ENTER**.

Route Review Page

4. On the Point Review Page, choose **Next** (highlight the next point on the route list), **Show Map** (show the point on a map window), or **Save** (save the point as a waypoint), and press **ENTER**. If the route point is a user waypoint, you can edit any of the waypoint properties on the Waypoint Page (see the "Editing and Managing Waypoints" section on page 66).

When you return to the Route Review Page, the next point in the route is automatically highlighted. This allows you to review each point on the route by pressing **ENTER** repeatedly.

To add points to the route:

1. Press **MENU** twice to open the Main Menu. Use the **ROCKER** to select **Route**.

2. Use the **ROCKER** to select the route, and press **ENTER**.

3. Use the **ROCKER** to highlight the spot in the route that you want to add the new point. (The new point is added before the highlighted route point.) Press **MENU**.

4. Highlight **Insert Waypoint**, and press **ENTER**. The Find Menu automatically opens for you to search for and select the point you want to add to the route.

5. In the point review page, highlight **OK**, and press **ENTER** to add the new point to the route.

To edit the route on the map:

1. Press **MENU** twice to open the Main Menu. Use the **ROCKER** to select **Route** from the vertical menu of tabs.

2. Select the route, and press **ENTER**. Press **MENU** to open the Route Review Page options menu.

3. Highlight **Edit on Map**, and press **ENTER**.

4. Use the **ROCKER** to select a location on the route (the route turns white when the arrow is over the route). Press **ENTER**.

5. Use the **ROCKER** to drag the route to the new point location, and press **ENTER**.
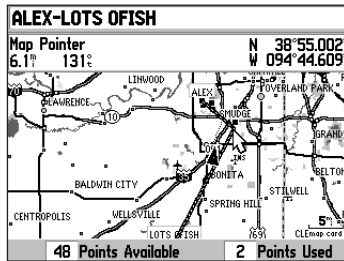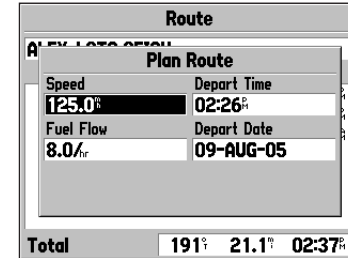

Editing the route on the map

6. If the New Waypoint Page opens, edit the waypoint, highlight **OK**, and press **ENTER**.

7. Repeat steps 4 through 6 until all points are added to the route. Press **QUIT** to finish.

To set speed and fuel/plan your route:

1. Open the Route Review Page options menu.

2. Highlight **Plan Route,** and press **ENTER**. (Highlight **Set Speed and Fuel** in Aviation Mode.)

Entering Speed and Fuel Flow for trip planning

3. Enter the data for Speed and Fuel Flow. When in Water and Land Modes, you also can enter the date and time of your departure. Press **QUIT** to return to the Route Review Page.

> *NOTE: Fuel flow rates are measured in "units per hour." System setting changes for units of measure (statute, nautical or metric) do not affect the fuel flow measure. You should enter fuel flow rates based on information for your vehicle (such as the operator's manual or performance specifications) and make note of the units of measure (gallons or liters).*

Editing and Managing Waypoints

When you have created and stored a waypoint, you can modify, review, rename, move, or delete it at any time through the Waypoint Review and Waypoint Edit Pages. These pages provide virtually the same information. For practical purposes, we refer to these pages as the "Waypoint Pages," unless it is necessary to discuss them individually.

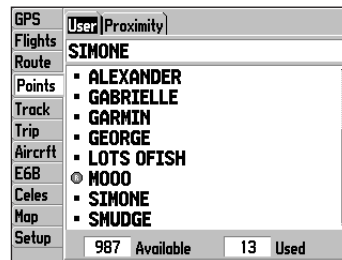### To access the Waypoint Review Page from the Map:

1. Use the **ROCKER** to highlight the waypoint on the Map Page.

2. Press **ENTER** to show the Waypoint Review Page. If the waypoint is located on a map feature or MapSource or BlueChart feature, the Waypoint Review Page can include additional tabs containing information about the other features at that location.

Waypoint Review Page

To access the Waypoint Edit Page:

1. Press **MENU** twice to view the Main Menu.

2. Use the **ROCKER** to highlight **Points** from the vertical list of tabs, and highlight the waypoint from the list.
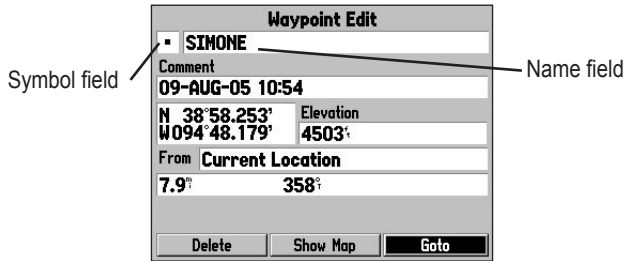

Points Tab in the Main Menu

3. Press **ENTER** to show the Waypoint Edit Page.

   If the waypoint is located on a map feature or MapSource or BlueChart feature, the Waypoint Edit Page does NOT show the details of the other map features.

Use either of these methods to access the Waypoint Page so you can edit and manage the waypoint.

To change the waypoint name:
1. Open the Waypoint Review or Waypoint Edit Page.
2. Highlight the waypoint name field, and press **ENTER**.
3. Use the **ROCKER** to enter a new name, and press **ENTER** when finished.

Symbol field — Name field

Waypoint Edit
SIMONE
Comment
09-AUG-05 10:54
N 38°58.253' Elevation
W094°48.179' 4503ª
From Current Location
7.9ª   358ª
Delete   Show Map   Goto

Waypoint Review Page

To change the waypoint symbol or other element:
1. Open the Waypoint Review or Waypoint Edit Page.
2. Highlight the waypoint symbol field to the left of the waypoint name or highlight another field you want to change, and press **ENTER**.
3. Use the **ROCKER** to select the symbol or enter data, and press **ENTER**.

To edit the next waypoint in the list:
1. After you have edited the waypoint on the Waypoint Edit Page, highlight **Next**, and press **ENTER**.
2. The Waypoint list appears with the next waypoint highlighted. Press **ENTER** to edit that waypoint.

Viewing the Waypoint on the Map

To view the waypoint on the map:
1. From the Waypoint Page, highlight **Show Map**.
2. Press **ENTER**. The waypoint is highlighted on a map with an information window at the top that shows the waypoint name, location and distance and bearing from your current location.

On the Show Map screen, two additional options are available by pressing **MENU**:

Measure Distance—allows you to measure the distance and bearing between two points on the map (see page 33 for more information).

Point to on Main Map—returns to the highlighted waypoint on the Map Page and exits the Waypoint Page.

Adding a Waypoint to a Route

Append to Route adds the selected waypoint to the end of a route. This option appears when you are not navigating. When you are navigating to a destination, **Add to Current Route** appears. The selected waypoint is added to the current route before the route destination.

To add a waypoint to the end of the route:
1. Open the Waypoint Page, and press **MENU** to open the options menu.
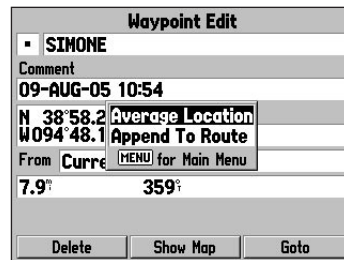
Waypoint Options Menu

2. Select **Append To Route** from the options menu. The Select Route window appears.
3. Highlight the route or select **New Route**, and press **ENTER**.
4. With **OK** highlighted, press **ENTER** to save the waypoint.

Averaging the Waypoint's Location

Average Location makes the unit take several sample location measurements for the waypoint and recalculate for a more accurate location reading.

To calculate the average location:

1. Open the Waypoint Page, and press **MENU** to open the options menu.
2. Select **Average Location** from the menu, and press **ENTER**. The Average Location window appears.

Average Location

3. Watch the fields change as the unit calculates the average location of the waypoint. Press **ENTER** to save the location.

> *NOTE: You must have a GPS satellite fix before you can average a waypoint's location.*

Managing Points

The Points tab of the Main Menu features two sub tabs, User and Proximity, that let you edit waypoints and manage a large number of waypoints quickly and efficiently. For more information about creating, editing, and deleting waypoints, refer to the "Creating Waypoints" section beginning on page 55.

To access the Points tab of the Main Menu:

1. Press **MENU** twice to open the Main Menu.
2. Highlight **Points** from the vertical list of tabs.

User Sub Tab

The User Points tab shows a master list of all waypoints currently stored in memory. From the User list, you can review, edit, rename, or delete individual waypoints or delete all user waypoints.

User Points Sub Tab

The total number of stored and available waypoints information is available at the bottom of the User sub tab, with the stored waypoints arranged in alphanumerical order.

To start a Goto from the User Sub tab:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Points** from the vertical list of tabs, then highlight **User** from the top row of tabs.

3. Use the **ROCKER** to highlight a waypoint.

4. Press **ENTER** when the waypoint is highlighted to review the waypoint on the Waypoint Page. See the previous pages for detailed information on reviewing and editing waypoints.

Deleting Waypoints

You can delete waypoints from the waypoint list in the **Points** tab or from the Waypoint Pages. To delete a waypoint from the Waypoint Page, use the **ROCKER** to highlight the on-screen **Delete** button and press **ENTER**.

> *NOTE: When you delete a waypoint, you cannot recover it from the unit. Back up important waypoints to a computer using the interface cable and software, such as MapSource, or write them down by hand.*

To access the Points tab of the Main Menu:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Points** from the vertical list of tabs.

3. Press the **ROCKER** right or left to highlight **User** or **Proximity** to open that sub tab.
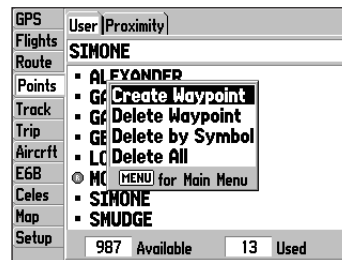
To delete a waypoint from the User sub tab:

1. From the **User** sub tab, use the **ROCKER** to highlight the waypoint you want to delete.

2. Press **MENU**, highlight **Delete Waypoint,** and press **ENTER**.

3. Press **ENTER** to confirm.

To delete waypoints by symbol or category:

1. From the **User** sub tab, highlight the waypoint you want to delete, and press **MENU**.

2. Highlight **Delete by Symbol** or **Delete by Category**, and press **ENTER**.

3. When deleting by symbol, highlight the symbol of the waypoint you want to delete, and press **ENTER**.

   When deleting by category, select the category you want to delete from the list, and press **ENTER**.

4. Highlight **OK**, and press **ENTER** to confirm. Choose **Cancel** or press **QUIT** to exit without deleting.

Proximity Sub Tab

The Proximity Sub tab lets you define an alarm circle around a stored waypoint location. The alarm circle can help you avoid reefs, rocks, or restricted areas. Up to 10 waypoints can be listed with a maximum alarm radius of 99.99 nautical miles, statute miles, or kilometers.

Proximity Sub Tab

If a proximity alarm circle overlaps an existing alarm circle, a "Proximity Overlaps Another Proximity Waypoint" message appears. Because the unit only alerts for one of the overlap points, use caution when navigating in these areas. If you enter an alarm circle overlap, you are only alerted to the closest proximity waypoint.

**To turn proximity alarms on or off:**

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Points** from the vertical list of tabs. Highlight **Proximity** from the row of tabs along the top of the screen.

3. Use the **ROCKER** to highlight the field below **Proximity Alarm**, and press **ENTER**.

4. Select the **ON** or **OFF** setting, and press **ENTER**.

To add a proximity waypoint:

1. From the Proximity Points tab, use the **ROCKER** to highlight an empty line on the Proximity List, and press **ENTER**. The Find Menu appears.

2. Select the waypoint or point of interest from the Find Menu. With **OK** highlighted, press **ENTER** to select that point. (For complete information about the Find Menu, see "Finding an Item" on page 51). The distance field is now highlighted.

3. Press **ENTER** to begin entry of the proximity radius.

4. Use the **ROCKER** to enter a distance value (up to 99.99 units), and press **ENTER**.

To clear one or all proximity waypoints from the list:

1. Open the **Proximity** sub tab.

2. Use the **ROCKER** to highlight the proximity waypoint to clear, and press **MENU**.
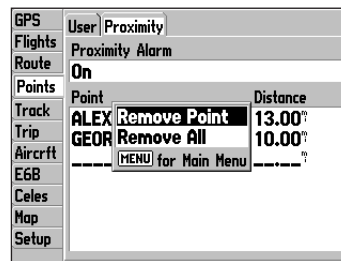
Proximity Sub Tab Options Menu

3. To clear a single alarm, highlight **Remove Point**, and press **ENTER**. To clear all proximity waypoints, select **Remove All**, and press **ENTER**.

4. Use the **ROCKER** to highlight **OK**, and press **ENTER**.

Managing Your Tracks

The GPSMAP 196 draws an electronic breadcrumb trail or "track log" on the Map Page as you travel. The track log contains points along its path, including time, and location for each point.

The track log starts recording as soon as the GPSMAP 196 gets a location fix. For the best results, clear the track log before you start traveling because when the track log is full, new track points overwrite the oldest track points.

The percentage of memory used by the current track log appears at the top of the Active sub tab. After the track log is cleared, it shows zero percent. When the screen reaches 100%, the most recent track points start to overwrite the least recent track points (if **Wrap** is selected for **Record Mode**). To avoid losing track points, save the track log when it approaches the 99% mark.

You must first save the track log before you can use the **Navigate Track** feature. The **Save** feature allows you to store up to 15 track logs from certain times and dates.

To access the Track tab:

1. Press **Menu** twice to open the Main Menu.
2. Highlight **Track** from the vertical list of tabs.

## Setting Up and Saving Your Tracks
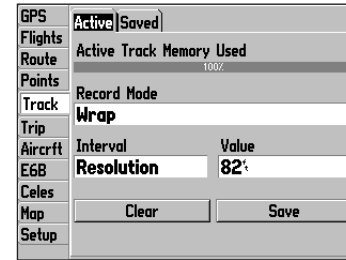
Active Track Sub Tab

Record Mode—**Wrap** records over the oldest tracks when the track log reaches 100%. **Fill** records a track log until the track log is full (100%). When **Off** is selected, the unit does not record tracks.

Interval—**Distance** records track points after a specified distance has been traveled. **Time** creates track points after a specified time has elapsed. **Resolution** records track points based on the resolution. The higher the resolution entered, the more points the unit creates to make the track.

Value—records a track according to the **Interval** and **Value**. Enter a specific distance, time, or resolution.

To clear the track log:

1. Press **MENU** twice to show the Main Menu.

2. Highlight **Track**, then highlight the **Active** sub tab to the right.

3. Select the **Clear** button, and press **ENTER**.
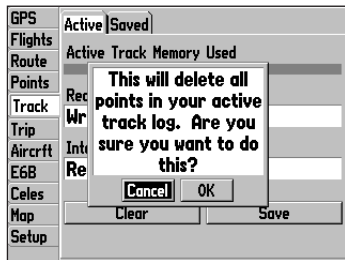
Clearing the track log

4. Highlight **OK**, and press **ENTER**. Press **QUIT** to exit.

To save the entire track log:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Track**, then highlight the **Active** sub tab to the right.

3. Use the **ROCKER** to select **Save**, and press **ENTER**.

4. A window pops up asking if you want to save the entire track log. To save the entire track, highlight **Yes**, and press **ENTER**.
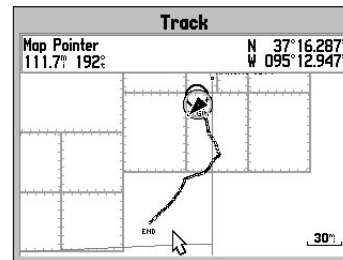
Saved Sub Tab

The Saved sub tab lists all of the saved tracks in your unit.
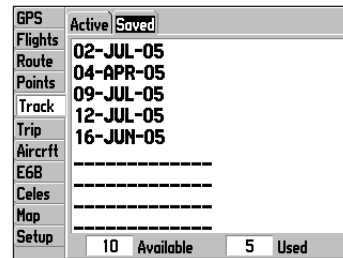
Saved Sub Tab

Press **MENU** to open the Saved sub tab options menu:

Review on Map—shows the highlighted track on the Map Page.

TracBack—navigates the track. You can either navigate the track as it is saved, or you can navigate the track in reverse.

Delete Track—erases highlighted track from the unit's memory.

Delete All—erases all tracks from the unit's memory.

To edit a track:
1. Press **MENU** twice to open the Main Menu.
2. Highlight the **Track** tab. Press the **ROCKER** right to highlight the **Saved** sub tab.
3. Highlight the track you want to edit, and press **ENTER**. The Track Review Page opens. Make changes you want.

Track Review Page

4. Highlight the **Name** field, and press **ENTER**. Use the **ROCKER** to change the name, and press **ENTER**.

5. Select a different screen style when the track appears on the map.
6. To show this track on the map, highlight the box next to **Show on Map**, and press **ENTER**.
7. To begin a TracBack, highlight **TracBack**, and press **ENTER**. For more information about the TracBack feature, refer to the next page.
8. To view the track on the map, highlight **Map**, and press **ENTER**. Press **QUIT** to return to the **Track** tab.
9. Highlight **OK**, and press **ENTER** to save the track. Press **QUIT** to exit.

Navigating a Saved Track

The TracBack function allows you to retrace your path using the track log automatically stored in the receiver's memory, which eliminates the need to store waypoints along the way. TracBack routes are created by reducing your track log into a route with up to 50 turns and activating an inverted route along those points. When activated, a TracBack route leads you back to the oldest stored track log point, so it is a good idea to clear the existing track log before you start your current trip. You must save an active track log before you can navigate it as a TracBack.

To start a TracBack:

1. Highlight a track you want.
2. Press **MENU**, and highlight **TrackBack**, and press **ENTER**.
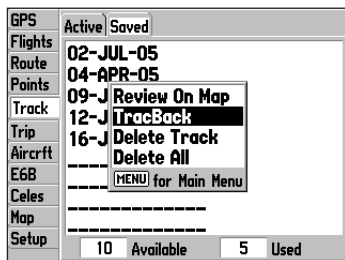
Selecting a Saved Track

3. Select **Original** or **Reverse**, and press **ENTER**.

TracBack Tips

When a TracBack has been started, the GPSMAP 196 divides the track into segments called legs. Up to 50 temporary turns are created to mark the most significant features of the track in order to duplicate your exact path as closely as possible. To get the most out of the TracBack feature, remember these tips:

- Always clear the track log at the point that you want to go back to (such as a dock or campsite).
- The **Record Mode** option on the Active sub tab must be set to **Fill** or **Wrap**.
- If the track log **Interval** option on the Active sub tab is set to the **Time** option, the route may not navigate your exact path (keep the interval set to Resolution for best performance).
- If the receiver is turned off or satellite coverage is lost during your trip, the TracBack draws a straight line between any point where coverage was lost and where it resumed.
- If the changes in distance and direction of your track are too complex, the waypoints may not mark your path accurately. The receiver then uses the most significant points of your track so there are fewer changes in direction.
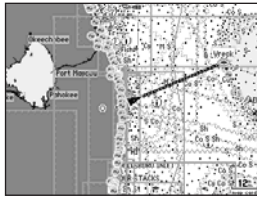
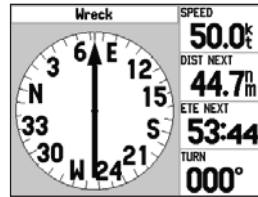# Basic Operation and Pages in Water Mode

To switch usage modes:
1. Press and hold the **PAGE** key.
2. Use the **ROCKER** to select Aviation, Land, or Water, and press **ENTER**.

Water Mode Page Sequence

Water Mode features four main pages: the Map, Compass, Active Route, and Position Data Page. Water Mode operates in a similar fashion to Aviation Mode, while also providing many features and operations of Land Mode.

**Map Page**   **Compass Page**   **Active Route Page**   **Position Data Page**

Map Page

Refer to page 28 through 35 in the "Aviation Mode Pages" section for more details about the Map Page.

The location marker (icon) that shows your travel on the Map Page is a triangle symbol ▲ in Water and Land Modes. The GPSMAP 196 always turns on in location mode, with the last known location centered on the map. When you press the **ROCKER**, the GPSMAP 196 enters pan mode, which moves the map to keep the white arrow ⇖ (map pointer) within the screen area.

In Water Mode, by default, five user-selectable data fields appear on the right side of the screen that can be configured to show any one of the possible data options. You can also add additional data fields to the page or select a full screen map without data fields.


Current Location — Map Range
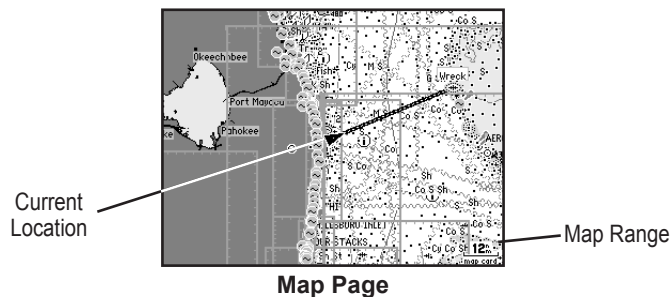
Map Page

Press the zoom keys (**IN** and **OUT**) to change the map range. Some items on the map only appear if the map is zoomed in to a specified level.

- Press **MENU** to open the options menu for the Map Page.
- Show and hide the heading line from the options menu.
- Use the **ROCKER** to measure the distance between two objects on the map.
- Change the page layout and data fields to customize the Map Page.

Compass Page

During active navigation, the Compass Page guides you to your destination with data fields and a graphic compass screen with a bearing pointer.

Compass Page in Water Mode
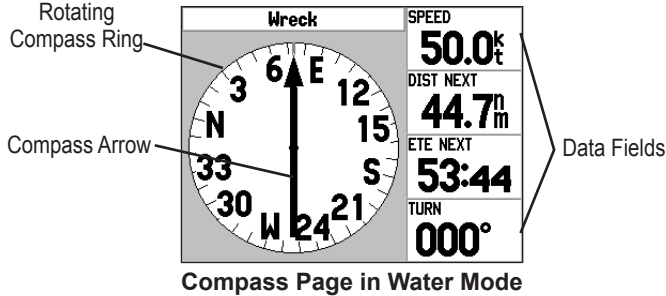
The middle of the page features a rotating compass ring that shows your course over ground (track) while you are moving. Your present course over ground is indicated at the top of the compass ring. The direction of the destination (bearing) relative to the course over ground is indicated by an arrow in the middle of the compass ring.

The compass ring and bearing indicators work independently to show the direction of your movement and the direction to your destination. If the arrow points up, you are going directly to the

waypoint. If the arrow points any direction other than up, turn toward the arrow until it points up, then continue in that direction.

> **NOTE:** *You must be moving for the compass to accurately update and show your heading.*

The right side of the Compass Pages features user-selectable data fields that show additional information during active navigation. For definitions of data field settings, refer to page 112 of the "Appendix."

Compass Page Options

The options menu on the Compass Page allows you to customize the Compass Page to your preferences. Like the Map Page, the Compass Page features user-selectable data fields on the right side of the screen. When the Compass Page is open, press **MENU** to open the options menu.

Main Menu

The Main Menu features some additional pages that are useful to you as you plan trips and use your GPSMAP 196. Some of these pages have already been discussed in-depth in previous sections. This section only contains the additional pages and features found in the Main Menu that have not been discussed yet.

The following tabs in the Main Menu allow you to restore their defaults: Track, E6B, Alarms, Display, and Setup.

To restore defaults:
1. Press **MENU** twice to open the Main Menu.
2. Use the **ROCKER** to highlight a tab.
3. Press **MENU** to open the options menu.
4. Highlight **Restore Default**.
5. Press **ENTER** to restore the tab to the defaults.

To restore all of unit's settings to the factory defaults at once, select **All Unit Defaults** from the options menu of the Setup tab.

GPS Tab

The GPS tab provides a visual reference of satellite acquisition, receiver status, and accuracy. The sky view and signal strength bars give an indication of what satellites are visible to the receiver and whether they are being tracked. More information on the GPS tab is located on page 4.
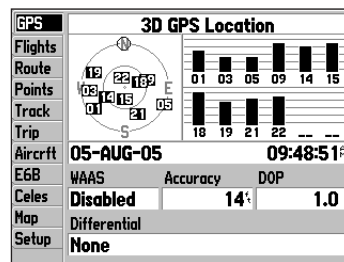
GPS Tab

Flights Tab

The Flights tab shows a list of any recorded flights, including date, route of flight, and flight time. The GPSMAP 196 saves up to 50 recorded flights while in Aviation Mode. Entries on this list are automatically created for each flight. More information on the Flights tab is located on page 42.

Flight Tab
Showing the flight details page

Route Tab

Use the Route tab create and store up to 50 reversible routes, with up to 50 points each. See the "Creating Routes" section beginning on page 52 for more information about routes.

Points Tab

The Points tab contains two sub tabs, User and Proximity, which allow you to manage a large number of waypoints quickly and efficiently. For more information about waypoints, see the "Creating Waypoints" section beginning on page 55.

User Sub Tab

The User sub tab shows a master list of all waypoints currently stored in memory. The total number of stored and available waypoints appears at the bottom of the User sub tab.

Proximity Sub Tab

Use the Proximity sub tab to shows an alarm circle around a stored waypoint location.

Track Tab

Use the Track tab to specify whether or not to record a track log, define how it is recorded, or save the track log data for future use. The Track tab is divided into two sub tabs: Active and Saved. For more information about tracks, see the "Managing Your Tracks" section beginning on page 73.

Active Sub Tab

The Active sub tab is for the active log (the log currently being recorded.) It shows the amount of track memory used and current settings.

Saved Sub Tab

The Saved sub tab shows a list of all saved tracks in your unit.

Trip Tab

The Trip tab shows the Trip Odometer, Moving Average Speed, Total Average Speed, Maximum Speed, Stopped Time, Moving Time, Total Time, and Odometer readings.

The trip computer readouts can be reset individually or collectively.

To reset the trip data:
1. Press **MENU**.
2. Select Reset Trip, Reset Max Speed, Reset Odometer or Reset All, and press **ENTER**.

Aircraft Tab

The Aircraft tab is divided into two sub tabs: Aircraft Profile and Weight & Balance. Information on the "Aircraft Tab" is located on page 43.

Aircraft Profile Tab

E6B Tab

The E6B tab in the Main Menu calculates Density Altitude, True Airspeed, and Winds Aloft (Head Wind, Tail Wind, Wind From, and Wind Speed), based on information you enter. Information on the "E6B Tab" is located on page 46.

Celestial Tab

The Celestial tab on the Main Menu shows sun and moon information, data for the tide, and hunting and fishing information. You can show this data for your current location, a location from the map, or a waypoint location. Also, you can select a different date and time, or use the current data.

To access the Celestial Tabs of the Main Menu:

1. Press **MENU** twice to open the Main Menu.

2. Highlight **Celes** from the vertical list of tabs.

3. Use the **ROCKER** to show the tab, such as **Sun & Moon**.

Sun & Moon Sub Tab

The Sun & Moon sub tab provides you with sun rise/set and moon rise/set times. A graphic screen of the moon phase is also shown. You can view Sun & Moon information for any date or location.

To view Sun & Moon information for a different date:

1. Use the **ROCKER** to highlight the **Date** field and press **ENTER**.

2. Use the **ROCKER** to change the digits of the date to the date you want.

3. Press **ENTER** when finished. The unit shows the sun and moon information for the date you entered or selected.

To use the current date again, highlight the Date field. Press **MENU**, highlight Use Current Date, and press **ENTER**.

Select the date and location

Moon Phase

Sun & Moon Sub Tab

Location of the Sun and Moon in the sky view
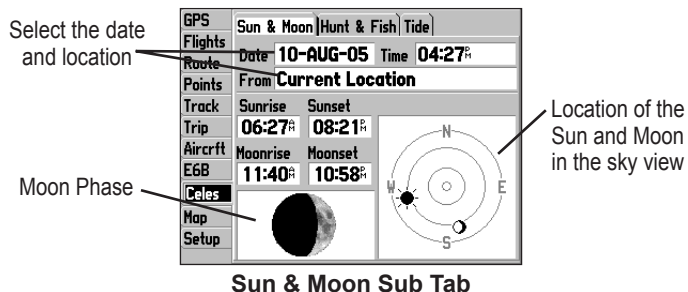
To view Sun & Moon information for a different location:

1. Use the **ROCKER** to highlight the **From** field and, press **ENTER**.

2. The Find Menu automatically opens.

3. Select a waypoint or point of interest, and press **ENTER**.

4. On the waypoint information page, press **ENTER**. The unit shows the sun and moon information for the location you selected.

To use the current location, highlight the **From** field. Press **ENTER**, highlight Current Location, and press **ENTER**.

Hunt & Fish Sub Tab

The Hunt & Fish sub tab provides you with predictions of the good and best times to hunt and fish in a selected location on a specific date.

To show the Hunt & Fish information:

1. Press **MENU** twice to open the Main Menu.
2. Highlight **Celestial** from the vertical list of tabs using the **ROCKER**.
3. Use the **ROCKER** to select the **Hunt & Fish** sub tab.

Hunt & Fish Sub Tab

To view Hunt & Fish information for a different date:

1. Highlight the **Date** field, and press **ENTER**.
2. Use the **ROCKER** to change the digits of the date to the date you want.
3. Press **ENTER** when finished. The unit shows the information for the date you entered.

To use the current date again, highlight the **Date** field. Press **MENU**, highlight **Use Current Date**, and press **ENTER**.

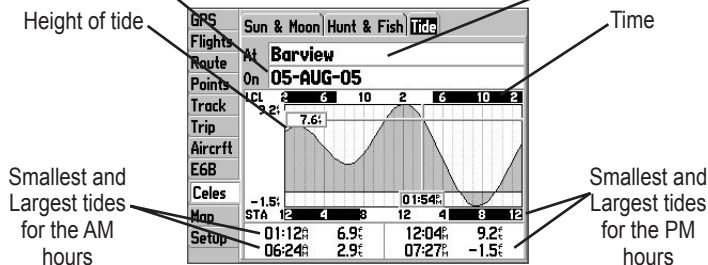### To view Hunt & Fish information for a different location:

1. Use the **ROCKER** to highlight the **From** field, and press **ENTER**.
2. The Find Menu automatically opens.
3. Select a point, and press **ENTER**.
4. On the information page, press **ENTER**. The unit shows the Hunt & Fish information for the selected location.

To use the current location, highlight the **From** field. Press **ENTER**, highlight **Current Location**, and press **ENTER**.

Tide Sub Tab

The Tide sub tab contains a graphical chart that shows tide station information in a 24-hour span starting at midnight station time. You can choose from different dates and over 3,000 tide stations.

Enter the Date for which you want to view the tide information

Select the Tide Station for which you want to view the information

Height of tide

Time

Smallest and Largest tides for the AM hours

Smallest and Largest tides for the PM hours

Tide Tab

The top of the page shows the tide station and date being referenced. The chart shows a 24-hour block of time, with the time progressing from left to right. The solid vertical lines represent 4-hour increments; the dotted vertical lines represent 1-hour increments.

The tide curve shows as a shaded area, with higher tides being taller and lower tides shorter. The bottom of the page indicates the times with the largest and smallest tides.

To view a tide chart for a different tide station:

1. From the **Tide** tab, highlight the **At** field, and press **ENTER**. The Find Menu opens showing the tide stations.

2. Press **MENU** and select **Near Current Location**, **Near Other** (select another location using the map), or **Near Destination**. The list is updated with your search requirements.

3. Select a tide station from the list, and press **ENTER**. The Tide Station Information Page opens.

4. Highlight **OK**, and press **ENTER**. The **Tide** tab appears again showing the tide chart for the selected tide station.

To view the tide chart for another date:

1. From the **Tide** sub tab with the chart shown, highlight the **On** field, and press **ENTER**.

2. Enter the date with the **ROCKER**, and press **ENTER**.

3. Press **ENTER**. The unit shows the chart for the date you entered or selected.

To use the current date again, highlight the **Date** field. Press **MENU**, highlight **Use Current Date**, and press **ENTER**.

To view a chart's details for another time during the day (other than current time):

1. From the **Tide** sub tab with the chart shown, press **MENU**, and select **Move Cursor**.

2. Press the **ROCKER** right or left to view the chart at another time.

3. To return to the current time, press **MENU**, and select **Stop Moving Cursor**.

To automatically start pointer mode to scroll the chart:

1. Use the **ROCKER** to highlight the **Date** field. Then press down to start the pointer (pan) mode.

2. Scroll the chart right to view the next day or left to view the previous day.

Map Tab

The Map Tab allows you to adjust the way items appear on the Map Page. Refer to page 34 for more information.
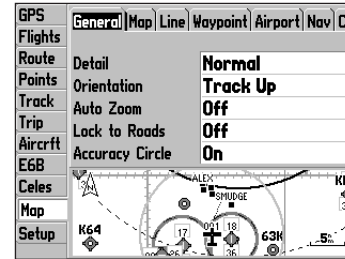
General Tab of the Map Page Setup

Setup Tab

To customize how your GPSMAP 196 operates, adjust certain system settings in the Main Menu using the Setup tab.

System Sub Tab

To open the System tab, press **MENU** twice to open the Main Menu. Select **Setup** from the vertical tab list. Then select **System** from the row of tabs along the top of the page.
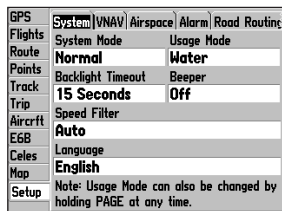
System Setup Tab

System Mode—sets the unit to operate in **Normal** Mode, **Battery Saver** Mode, or **Simulator** Mode (for practice ONLY).

Usage Mode—sets the unit to the mode you want.

Backlight Timeout—sets the backlight to turn off after the selected time frame.

Beeper—sets the beeper to sound on key press and alarms.

Speed Filter—allows the unit to average speed readings. Choose from **Off**, **Auto** (automatically controls filtering), or **On** (allows you to enter a value in seconds).

Language—allows you to select from various languages for the unit's pages and menus.

VNAV Sub Tab

The VNAV sub tab on the Main Menu provides settings for the vertical navigation feature. These settings create a three-dimensional profile that guides you from your present location and altitude to a final (target) altitude at a specified location. More information on VNAV is available on page 38.

VNAV Sub Tab

Airspace Alarms Sub Tab

The Airspace sub tab provides alarm settings for the following items: **Class B, CTA; Class C, TMA; Towers, Cntrl Zones; Restricted Areas, MOAs; Mode C Veils; Other SUAs**. Select **On** to enable or **Off** to disable.

Altitude Buffer—sets the buffer for the altitude alarm. Highlight the **Altitude Buffer** field, and press **ENTER** to select a different value. Use the **ROCKER** to select the digits.

Airspace Alarms Sub Tab

To set an alarm:

1. Press **MENU** twice to open the Main Menu.

2. Use the **ROCKER** to select the Setup tab, and then the **Alarms** sub tab.

3. Highlight the field below the alarm name you want activate, and press **ENTER**.

4. Change the mode to **On**, and press **ENTER**. If necessary, highlight the next field to the right, and press **ENTER**, enter the settings, and press **ENTER**.

Alarm Sub Tab

Next Turn—sets an alarm to indicate next turn in route. Select **Off** for no Next Turn alarm. Select **Dist** to enter a specific distance. For example, if you enter 1 nm, the Next Turn alarm sounds one nautical mile before you reach the next turn. Select **Time** to enter a specific time before the turn for the alarm to go off. For example, if you enter 00:02:00 the Next Turn alarm sounds two minutes before you reach the next turn. Select **Auto** for the unit to provide a Next Turn alarm at its discretion.

Arrival—sets an alarm to sound when you are a specified distance or time away from a destination waypoint. Select **Off** for no Arrival alarm. Select **Dist** to enter a specific distance. Select **Time** to enter a specific time before the destination for the alarm to go off. Select **Auto** for the unit to provide an Arrival alarm at its discretion.

Off Course—sets an alarm to sound when off your course. Select **On**, then enter a distance.

Anchor Drag—sets an alarm to sound when you have exceeded a specified drift distance. Select **On**, and then enter a distance.

System Alarms Sub Tab

Clock—sets an alarm based on the unit's clock. Select **On**, and then enter a specific time that you want the alarm to sound. The unit must be on for the clock alarm to work.

DGPS—sets an alarm to sound when the unit loses a differential fix.

Accuracy—sets an alarm to sound when GPS accuracy falls outside of the user-set value. Select **On**, and then enter a specific distance.

Road Routing Sub Tab

Use the Road Routing sub tab to select road routing settings.

To access the Road Routing sub tab

1. Press **MENU** twice to open the Main Menu.
2. Use the **ROCKER** to select the **Setup** tab.
3. Press right on the **ROCKER** to select the **Road Routing** sub tab.

Road Routing Sub Tab

Route Preference—allows the unit to calculate a route for:

- **Faster Time**—routes calculated are faster to drive, but can be longer in distance.
- **Shorter Distance**—routes calculated are shorter in distance but can take more time to drive.
- **Off Road**—creates a direct line from your current location to your destination.

Ask My Preference—determines whether you are asked to select a route preference before route calculations.

Calculation Method—sets how the unit searches for the route.

- **Quickest Calculation**—calculates the route the quickest, but it might not produce the best route.
- **Quick Calculation**—takes a more time to calculate, but generates a better quality route.
- **Better Route**—generates an even better quality route, but uses a longer calculation time.
- **Best Route**—generates the most optimal route, but takes the longest time to calculate.

Calculate Routes for—sets route calculation for the particular vehicle you are operating to optimize the route for your vehicle type, as some roads have vehicle-based restrictions.

Off-Route Recalc—allows you to set whether the unit prompts you when it is recalculating your route (**Prompted**), or whether the unit recalculates automatically. You can also set whether the unit announces the recalculation (**Automatic - Announced)** or recalculates silently (**Automatic - Silent**). You can also turn route recalculation **Off**.

Next Turn Pop-up—turns the Next Turn window **Off**, or opens the window when you hold **NRST/FIND**, opens automatically (**Automatic Only**), or **Both**.

Avoid—allows you to avoid certain road types and maneuvers on your route. The unit uses these road types only if alternative routes take you too far out of your way or if no other road is available.

Timers Sub Tab

To open the Timers sub tab, press **MENU** twice, select **Setup** from the vertical tab list, and **Timers** from the row of tabs along the top.

Timers Sub Tab

User—allows you to set the timer to **Count Up** or **Count Down**. You can also **Reset** the timer and turn it **Off**.

Battery—provides a running count of how long the unit has been operating with the current batteries. The timer automatically stops when using an external power source, and automatically reset when depleted batteries are replaced. The timer can also be manually reset.

Fuel Tank—allows you to set a reminder for switching fuel tanks. The reminder message repeats at the specified interval after the beginning of each flight.

Last Flight— indicates the duration of the last recorded flight. During flight, this field is titled "Flight" and counts up as the flight is in progress.

Since Midnight—allows you to view the time the unit has been turned on since midnight. This resets if you restore **All Unit Defaults** from the **System** tab.

Time Sub Tab

The Time sub tab allows you to set the time format and zone. You can also set the unit to conform to Daylight Saving Time. The current time and date is shown at the bottom of the page.

To open the Time sub tab, press **MENU** twice to open the Main Menu. Select **Setup** from the vertical tab list. Then select **Time** from the row of tabs along the top of the page.

Time Sub Tab

Time Format—allows you select between a 12-hour or 24-hour time format.

Time Zone—allows you to choose your correct time zone so the GPSMAP 196 shows the correct local time. Select **Other** to enter a UTC Offset.

Daylight Saving Time— Auto: automatically adjusts for daylight saving time based on current location and date; On: enables daylight saving time; Off: disables daylight saving time.

If the incorrect date is shown, press **MENU**, highlight **Set Date**, and press **ENTER**. Enter the current year. The GPSMAP 196 uses this information when gathering satellite data to show the correct date.

Units Sub Tab

The Units sub tab allows you to customize measurement units for the entire system. To open the Units sub tab, press **MENU** twice to open the Main Menu. Select **Setup** from the vertical tab list. Then select **Units** from the row of tabs along the top of the page.

Distance and Speed—select the unit to show your speed and distance traveled.

Direction Display—select the unit to show your direction. Mils is a unit of angle measurement used in military settings, in which 17.78 mils equal one degree.

Temperature—select the unit to show the temperature.

Altitude—select the unit to show your altitude.

Depth—select the unit to show the depth.

Vertical Speed—select the unit to show your vertical speed.

Pressure—select the unit to show the pressure.

Location Sub Tab

Refer to the "Appendix" of this guide for more information about location formats and map datums. Also visit the National Imagery and Mapping Agency at http://www.nima.mil for more information on grids and datums.

Location Format Sub Tab

Changing the **Location Format** coordinates the system in which a given location reading is shown. The default format is latitude and longitude in degrees, minutes, and thousandths of a minute (hddd°mm.mmm).

Map Datum Sub Tab

Datums are used to describe geographic locations for surveying, mapping, and navigation and are not actual maps built in the unit. The default setting is WGS 84. The unit automatically selects the best datum based on your position format.

> ⚠ *WARNING: Selecting the wrong map datum can result in substantial location errors. You should only change the position format if you are using a map or chart that specifies a different position format or map datum or want to use a format you are familiar with. When in doubt, use the default WGS 84 datum for best overall performance.*

Selecting a Different Heading Reference

You can select from **Auto Mag Var**, **True**, **Grid,** and **User Mag Var**. **Auto Mag Var** provides magnetic north heading references that are automatically determined from your current location. **True** provides headings based on a true north reference. **Grid** provides headings based on a grid north reference (and is used in conjunction with the grid position formats).

User Mag Var allows you to specify the magnetic variation at your current location and provides magnetic north heading references based on the variation you enter. Enter the magnetic variation of your current location in the **Magnetic Variation** field if you have selected **User Mag Var** for the heading.

⚠ *WARNING: If **User Mag Var** is selected, the unit does not automatically calculate and update the magnetic variation at your present location. You must update the magnetic variation as your location changes. Failure to update this setting can result in substantial differences between the information shown on your unit and external references, such as a magnetic compass.*

Interface Sub Tab

The Interface sub tab controls the input/output format used when connecting your unit to external devices. To open the Interface sub tab, press **MENU** twice to open the Main Menu. Select **Setup** from the vertical tab list. Highlight and select the Serial Data Format you want.
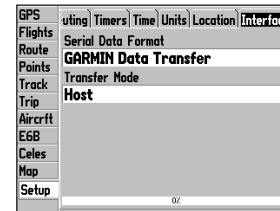
Interface Sub Tab

**Serial Data Format**—sets the data format to one of the following:

• **Garmin Data Transfer**—the proprietary format used to exchange data with a PC or another Garmin GPSMAP 196.

- **GARMIN DGPS**—used to connect the GPSMAP 196 with a Garmin DGPS beacon receiver.

- **NMEA In/NMEA Out**—supports the input/output of standard NMEA 0183 version 2.3 data and sonar NMEA input support for the DPT, MTW, and VHW sentences.

- **Aviation In**—the proprietary format used for connection to a Garmin panel-mounted GPS receiver. Allows the GPSMAP 196 to show a Goto or route selected on the panel-mounted GPS receiver. This eliminates the need to enter the destination on both units.

- **RTCM In**—allows Differential GPS (DGPS) input using a standard RTCM format.

- **RTCM In/NMEA Out**—allows Differential GPS (DGPS) input using a standard RTCM format and also provides NMEA 0183 version 2.3 output.

- **RTCM In/Text Out**—allows Differential GPS (DGPS) input using a standard RTCM format and also outputs simple text data that includes, data, time, location, and velocity.

- **Text Out**—allows the unit to output simple text data that includes, data, time, location, and velocity. The Baud can be set to 1200, 2400, 4800, or 9600.

- **None**—provides no interfacing capabilities.

If you select GARMIN DGPS or RTCM In/NMEA Out format, you can control a differential beacon receiver directly from your GPSMAP 196 using the Interface sub tab. You can have the unit automatically scan for the DGPS beacon signal, or you can enter the beacon frequency and bit rate on the unit, and the information is used to tune the beacon receiver. If you use a DGPS receiver, WAAS capability is automatically turned off.

To have the unit automatically scan for a frequency:

1. With the unit set to **GARMIN DGPS** or **RTCM In/NMEA Out**, use the **ROCKER** to highlight the **Beacon** field, and press **ENTER**.

2. Highlight **Scan**, and press **ENTER**. The numbers in the **Frequency** field change as the unit scans from 284 kHz to 325 kHz, 200 bit rate, then 100, at 6-second intervals.
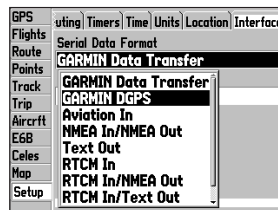
Interface sub tab of the Setup tab with GARMIN DGPS selected

The Status field shows one of the following:

- **Tuning**—the unit is attempting to tune to the specified frequency and bit rate.
- **Scanning**—the unit is automatically scanning through the frequencies and bit rates.
- **Receiving**—the unit is receiving DGPS signal and ready for operation.
- **Check Wiring**—the unit is not making connection with DGPS receiver.

To restart the scan:

1. Press **MENU**.
2. Highlight **Restart Scan**, and press **ENTER**.

To manually enter a frequency and bit rate:

1. With the unit set to **GARMIN DGPS** or **RTCM In/NMEA Out**, use the **ROCKER** to highlight the **Beacon** field, and press **ENTER**.
2. Highlight **User**, and press **ENTER**.
3. Highlight the **Frequency** or **Bit Rate** field, press **ENTER,** and enter a frequency or bit rate. Press **ENTER** when done.

When the unit is receiving a DGPS signal, the SNR (Signal to Noise Ratio) and Distance fields show data. The SNR range is 0 dB to 30 dB, with 30 being the best. The Distance may or may not show data, based on the signal being broadcast from the DGPS site.

The DGPS beacon transmitters are operated by the United States Coast Guard (or similar government agency in other countries), which is responsible for their accuracy and maintenance. For DGPS transmitter problems or to find the most updated list of frequencies and coverage areas, contact your local USCG or see their Web site at http://www.navcen.uscg.mil/.

Advanced NMEA Output Setup

If you are going to interface the GPSMAP 196 with another piece of equipment (such as a radar or autopilot), the unit needs to be set to output NMEA data. The NMEA data transmission can be customized to keep the output rate at two seconds. If too many NMEA sentences are selected the unit can take longer than two seconds to update.

To access the Advanced NMEA Output Setup:
1. Press **MENU** twice to open the Main Menu.
2. Use the **ROCKER** to select **Setup** from the vertical tab list.
3. Select **Interface** from the row of tabs along the top.
4. Highlight the field below **Serial Data Format**. Press **ENTER**.
5. Select **NMEA In/NMEA Out**. Press **ENTER**.
6. Press **MENU** to open the options menu. Select **Advanced NMEA Setup**, and press **ENTER**.
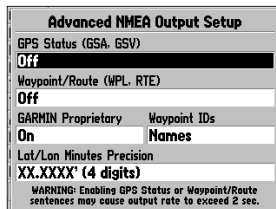
Advanced NMEA Output Setup

The Advanced NMEA Output Setup Page allows you to change the precision of the Lat/Lon minutes, set Waypoint IDs to names or numbers, as well as turn on and off the GPS status, the GARMIN Proprietary sentences, and Waypoint/Route (WPL, RTE).

Appendix

Specifications

Physical Specifications

Size: 6.18" W x 3.4" H x 2.22" D
                        (15.7 x 8.64 x 5.72 cm)

Weight: 1.5 lbs (.68 kg)

Display: 3.8" diagonal (9.65 cm) high-contrast, FSTN display with backlighting (320 x 240 pixels, 12-gray levels

Case: Fully gasketed, high-impact plastic alloy, waterproof to IEC 60529 IPX7

Temp. Range: 5°F to 158°F (-15°C to 70°C)

Power

Battery: 4 AA Alkaline (not included)

Battery Life: Up to 16 hours in Battery Saver Mode

Source: 8–35 VDC

Fuse: AGC/3AG-2.0 Amp

Performance

Receiver: Differential-ready 12 parallel channel receiver

Acquisition Times: Approx. 15 seconds (warm start)
                        Approx. 45 seconds (cold start)
                        Approx. 2 minutes (First Time/AutoLocate®)

Update Rate: 1/second, continuous

Accuracy

GPS: *15 meters (49 feet) RMS 95% typical

DGPS (USCG):   3–5 meters (10–16 ft), 95% typical

DGPS (WAAS):   < 3 meters (10 ft) 95% typical with DGPS corrections

Velocity: 0.05 knot RMS steady state

Dynamics: 6 *g*'s

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

Optional Accessories

In addition to the standard accessories included with your GPSMAP 196, the optional accessories are designed to enhance the operation of the GPSMAP 196.

To obtain replacement parts and optional accessories, contact your Garmin Dealer, Garmin Product Support in the U.S.A. at 800/800.1020, or Garmin Europe at 44/0870.8501241.

⚠️ *WARNING: Garmin accessories have been designed and specifically tested for use with Garmin products. Accessories offered for sale by other manufacturers have not been tested or approved for use with Garmin products. Use of such accessories could cause damage to the GPSMAP 196 and void the warranty.*

Auto Navigation Kit—Provides the parts and map data to use the GPSMAP 196 in an automobile.

GA 29, **GA 29F**, and **GA 26C Antennas**—Garmin remote antennas.

Non-Skid Friction Mount—Portable vehicle mount, no installation required.

Permanent and Temporary Adhesive Disks—Adhesive disks for using the unit in a vehicle.

PC Interface Cable—Connects the unit to a serial port on your PC.

Power/Data Cable—Allows you to connect the unit to the electrical system using the bare wires.

Programmable Data Cards—Blank data cards available in a variety of sizes. Download detailed map data from MapSource CD-ROMs to a data card, either directly through your GPSMAP 196 using the included PC Interface Cable, the optional PC Interface Cable (with a Serial connector), or with the optional USB Data Card Programmer.

USB Data Card Programmer—Programs blank data cards at high speed through a PC.

Carrying Case—Protects the GPSMAP 196 when not in use; with storage for data cards.

Protective Cover—Snaps on the front of the unit to protect the screen from damage.

MapSource Software CD-ROMs—Offers several detailed mapping options that are compatible with the GPSMAP 196, including City Select, BlueChart, Fishing Hot Spots, and Topo.
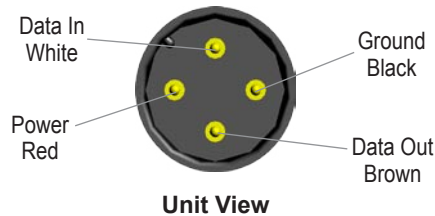
Pre-Programmed Data Cards—Data cards pre-programmed with either Garmin BlueChart or Fishing Hot Spots map data.

Installation Information

This section of the Appendix provides information on connecting the GPSMAP 196 to auxiliary devices and removing the antenna.

Connecting the Power/Data Cable

The power/data cable connects the GPSMAP 196 to an 8–35 VDC system and provides interface capabilities for connecting external devices. The color code in the diagram below and to the right indicates the appropriate harness connections. Replacement fuse is a 3AG - 2.0 Amp fuse.

Data In
White

Power
Red

Ground
Black

Data Out
Brown

Cable View

Data In
White

Ground
Black

Power
Red

Data Out
Brown

Unit View

Red: Power

Black: Ground

Brown: Data Out

White: Data In

(-)   (+)

8-35 volts DC

RXD +

Autopilot/
NMEA Device

RXD -

Brown   (+)

GBR 21/23
Beacon
Receiver

(-)

Blue
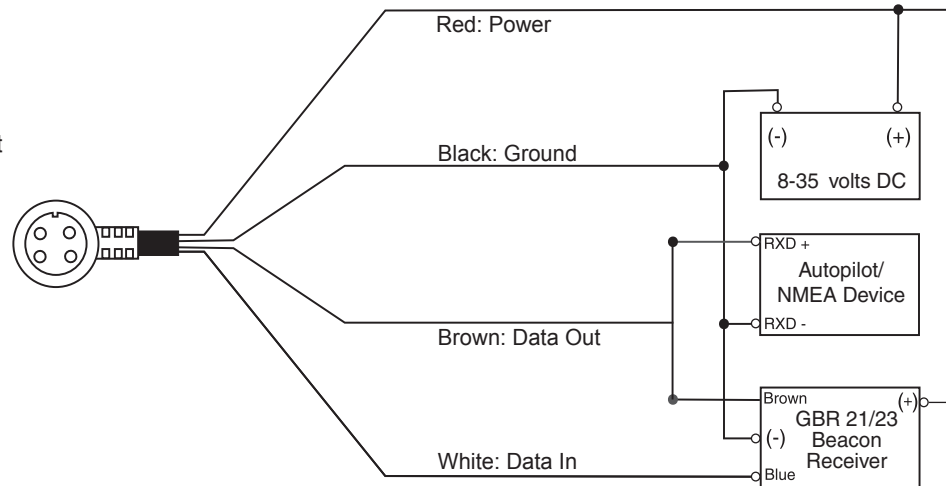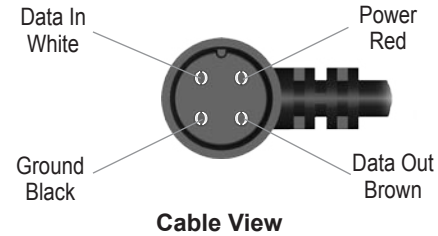
Installing and Removing Data Cards

The GPSMAP 196 uses an optional Garmin data card to show digital charts and maps. Install the data card in the slot located on the bottom of the unit. Install or remove the data card at any time, whether the unit is on or off.

You can load a variety of information on your data card, such as BlueChart and MapSource detailed maps in a MapSource program. You can buy pre-programmed cards to use with your GPSMAP 196.

Data cards are not waterproof, should not be exposed to moisture or excessive static charges, and should be stored in the case supplied with the card.

To install a data card:

1. Insert the card into the slot on the bottom of the unit. Be sure the label is facing the front of the unit.

2. Firmly push the card into the unit. It is not necessary to force the card. The handle is still exposed when it is properly inserted.

3. If the unit is on, a confirmation tone sounds. The first time you insert a programmed data card, the unit takes a few seconds to read the card. When the data card has been properly installed and accepted, a summary screen noting the card details appears. Press **ENTER** to acknowledge.

If you insert a data card and get a card format not recognized message, try removing the card and reinserting it. If the card is still not recognized, contact Garmin Product Support or your Garmin dealer.

To remove a data card:

1. Grasp the card handle. The handle expands for easy removal.

2. Pull the card out of the card slot on the bottom of the unit.

3. If the unit is on, a confirmation tone sounds when the data card has been removed.

Interfacing

The following formats are supported for connection of external devices: Garmin proprietary Differential GPS (DGPS), Garmin proprietary aviation input, NMEA 0183 (versions 3.0), ASCII Text Output, RTCM SC-104 input (version 2.0).

The following are the sentences for NMEA 0183, version 3.0 output: Approved sentences — GPRMC, GPGGA, GPRMB, GPGLL, GPBWC, GPVTG, GPXTE and GPBOD; Proprietary sentences — PGRME, PGRMZ, PGRMM and PSLIB. The GPSMAP 196 also includes optional NMEA sentences for the GPGSA, GPGSV, GPWPL, GPRTE.

You can download a copy of Garmin's proprietary communication protocol from the Help and Support section of our Web site at www.garmin.com

Removing the GPS Antenna

You can remove the antenna to use an external antenna. After the antenna is removed, the BNC connector is exposed and ready for use with an external antenna. For information on connecting an external antenna to the GPSMAP 196, refer to the installation instructions that came with the antenna.

To remove the GPS antenna:

1. Remove the external power cable from the connector on the back of the GPSMAP 196.

2. Rotate the antenna to approximately a seven o'clock position. The alignment notches in the casing must line up with the notches on the antenna.

3. Pull the antenna away from the GPSMAP 196 unit.
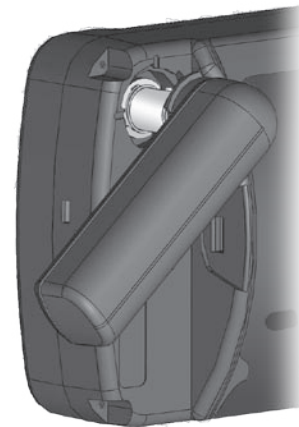
Removing the GPS Antenna

Learning About GPS

The Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the United States Department of Defense.

GPS was originally intended for military applications, but in the 1980s, the government made the system available for civilian use. GPS works in any weather conditions, anywhere in the world, 24 hours a day. There are no subscription fees or setup charges to use GPS. For more information refer to the Garmin Web site at www.garmin.com and also read the *GPS Guide for Beginners*, which can be found on the Web site at http://www.garmin.com/aboutGPS/manual.html.

Common GPS Terms

Initialize—the first time a GPS receiver orients itself to its current location and collects data. After the receiver is initialized, it remembers its location and acquires a location more quickly.

Location—an exact, unique location based on geographic coordinates (Latitude and Longitude).

Route—A group of waypoints entered into the GPS receiver in the sequence you want to navigate them.

Waypoint—a location you store in your GPS.

What is Differential GPS (DGPS)?

The United States and Canadian governments (among others) have set up Differential GPS (DGPS) stations to transmit correction signals. They are operational in coastal areas and on many navigable river systems.

The DGPS system is available for use without a fee, but you do need additional equipment to receive DGPS signals: A beacon receiver compatible with the RTCM format sentences supported by your Garmin GPS is needed to use DGPS.

Refer to the United States Coast Guard's Web site (http://www.navcen.uscg.gov/) for locations and status of the differential stations.

Differential Field

Differential receiver status is indicated in the bottom left field of the GPS Page and shows one of the following conditions:

- **None**—no optional beacon receiver is attached or enabled on the Interface sub tab on the Main Menu or WAAS is turned off.
- **Searching for WAAS**—WAAS is enabled and the receiver is searching for WAAS signal.
- **Using WAAS**—WAAS capability is enabled and the unit is receiving WAAS corrections.

- **Check Beacon Wiring**—the DGPS setting is enabled in the Interface sub tab on the Main Menu but no DGPS device is detected.
- **No Beacon Signal**—DGPS receiver is attached, but not transmitting RTCM data to GPS.
- **Tuning Beacon**—the receiver is tuning manually to a DGPS frequency.
- **Using Differential**—the unit is receiving DGPS corrections.
- **Scanning for Beacon**—the DGPS receiver is scanning for an available frequency.

What is WAAS?

The Wide Area Augmentation System (WAAS) is an FAA-funded project to improve the overall integrity of the GPS signal and increase location accuracy for users in North America.

The system is made up of satellites and approximately 25 ground reference stations located across the United States that monitor GPS satellite data. Two master stations, located on either coast, collect data from the reference stations and create a GPS data correction message.

According to the FAA's Web site, testing of WAAS in September 2002 confirmed an accuracy performance of 1–2 meters horizontal and 2–3 meters vertical throughout the majority of the continental United States and portions of Alaska.

WAAS is just one service provider that adheres to the MOPS (Minimum Operational Performance Standard) for global Satellite Based Augmentation Systems (SBAS). Eventually, there will be several services of worldwide geostationary communication satellites and ground reference stations.

All SBAS systems use the same receiver frequency; therefore, any operational SBAS system should be capable of providing your GPS unit with increased accuracy at any location in the world.

Currently, enabling WAAS on your Garmin GPSMAP 196 in regions that are not supported by ground stations may not improve accuracy, even when receiving signals from an SBAS satellite. In fact it can degrade the accuracy to less than that provided by GPS satellites alone. For this reason, when you enable WAAS on your Garmin GPS receiver, the receiver automatically uses the method that achieves the best accuracy. To enable WAAS, refer to .

For more information, refer to http://gps.faa.gov/Programs/WAAS/waas.htm.

LORAN TD Setup

LORAN C is a radio navigation aid operated and maintained in the United States by the United States Coast Guard. The name LORAN is an acronym for "LOng RAnge Navigation." The LORAN system covers the entire United States and the United States Coastal Confluence Zone. From the perspective of a mariner, the system is used for ocean and coastal navigation. It can be used as a supplemental system for harbor and harbor approach navigation, and it is used for inland navigation by recreational vehicles.

LORAN TD Feature

The LORAN TD (Time Delay) feature eases the transition from using LORAN to using GPS. The GPSMAP 196 unit automatically converts GPS coordinates to LORAN TDs for those who have a collection of LORAN fixes for favorite fishing spots and other waypoints recorded as TDs. You can show your location as a TD or enter waypoints as TDs. The accuracy to be expected from this conversion is approximately thirty (30) meters. When the unit is placed in the LORAN TD format mode, it simulates the operation of a LORAN receiver. Location coordinates can be showed as TDs, and all navigation functions can be used as if the unit was actually receiving LORAN signals.

Using the LORAN TD Format

When creating new waypoints using LORAN TD coordinates, you must set the correct LORAN chain number and secondary stations in the Setup TD field before storing the waypoint. After the waypoint is stored in unit memory, it always reference the LORAN chain number and secondary stations currently selected in the Setup TD field. If you enter a different LORAN chain number, or change the secondary stations or offsets in the Setup TD field, the active waypoint information does reflect those changes. Since the GPSMAP 196 does not rely on the LORAN signal for navigation, it can reference a different GRI chain and/or secondary stations and still navigate to the location stored in memory.

The LORAN Location Format field is located under the Units sub tab in the Main Menu. The LORAN TD Setup window contains the fields to select the Loran GRI-Chain Number, Primary and Secondary Stations, and TD Offsets.

To set up Loran TD from the Main Menu:
1. Press **MENU** twice to show the Main Menu.

2. Use the **ROCKER** to highlight **Setup** on the vertical tab list. Then select **Location** from the row of horizontal tabs.

3. Using the **ROCKER**, highlight the **Location Format** field, and press **ENTER**.
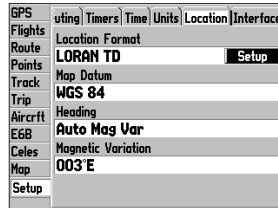
Location Tab of the Setup Tab

4. Highlight **Loran TD**, and press **ENTER**.

5. Highlight the **Setup** button located on the right side of the **Location Format** field, and press **ENTER**. The Loran TD Setup window appears.

6. To change the settings of any of the five fields, highlight the field, press **ENTER,** enter the setting using the **ROCKER**, and press **ENTER**.

7. When finished, highlight the **Save** button, and press **ENTER**.
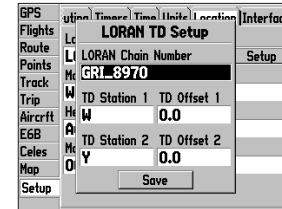
LORAN TD Setup

If the active GRI Chain, secondary stations, or offsets have been changed since the waypoint was created, the waypoint now references the active GRI chain and secondary stations and adjust the TD coordinates accordingly. Remember that the GPS is not relying on the LORAN signal for navigation and actually converts the TD coordinate to a useful latitude and longitude coordinate before storing the waypoint to memory or using it for navigation. Because of this, the unit can navigate to a TD coordinate anywhere in the world.

You must know your GRI chain number and/or secondary stations to create a LORAN TD location. For more information read our LORAN TD Position Format Handbook, available at the Garmin Web site, at www.garmin.com/support/userManual.html.

Map Datums and Location Formats
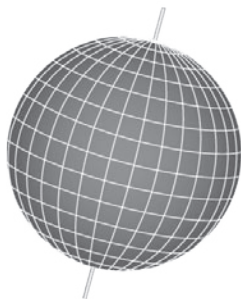
Map Datums are based on a mathematical model of the Earth.

What are Map Datums?

A datum is a mathematical model of the Earth that approximates the shape of the Earth and enables calculations to be carried out in a consistent and accurate manner. The datum is physically represented by a framework of ground monuments (such as trig. stations) whose locations have been accurately measured and calculated on this reference surface. Lines of latitude and longitude on a map or chart are referenced to a specific map datum. Every chart has a map datum reference and the GPSMAP 196 can be set to match most of those commonly used.

If you are navigating and comparing the GPS coordinates to a map, chart, or other reference, the map datum in the GPS unit should be set to the same datum as the map to ensure the most accurate navigation.

What is a Location Format?

Your current location can be viewed on the GPS in the form of coordinates. Since different maps and charts use different location formats, Garmin GPS units allow you to choose the correct coordinate system for the type of map you are using. The most common format is latitude and longitude, which is used by all Garmin units. You can change the location format to use with other coordinate systems in Location Preferences. UTM/UPS (Universal Transverse Mercator/Universal Polar Stereographic) are easy-to-use metric grids that are found on most USGS topographic quadrangle maps. Several other grids, including a user-definable grid (for the advanced user), are available.

For more information about using paper maps with your Garmin unit, refer to *Using a Garmin GPS with Paper Land Maps*, available for download at http://www.garmin.com/manuals/UsingaGarminGPSwithPaperLandMaps_Manual.pdf.

Jeppesen Database Information

The GPSMAP 196 includes an internal Jeppesen® database that provides location and facility information for thousands of airports, VORs, NDBs, and more. Updates to the Jeppesen database are available every 28 days online (www.garmin.com). The update program is designed to operate on Windows®-compatible PCs and requires the included PC Interface Cable to connect your GPSMAP 196 to the PC's serial communications port. The following information is provided from the internal Jeppesen database:

Airport—* identifier, facility name, city/state/country, latitude/longitude, field elevation, available fuel types, runway designations and layout, runway surface, runway length, runway width, runway lighting, communication frequencies, and published approaches.

Weather—frequencies associated with an airport (ASOS, ATIS, and AWOS).

VORs—* identifier, facility name, city/state/country, location (latitude/longitude), frequency, service volume (high, low, terminal), and type (such as VOR-DME, TACAN, and VORTAC).

NDBs—* identifier, facility name, city/state/country, location (latitude/longitude), and frequency.

Intersections—identifier, nearest VOR, radial and distance from nearest VOR, location (latitude/longitude), and region/country.

ARTCC—Air Route Traffic Control Centers.

Airspace—boundaries (Class B, Class C, Control Zones, SUAs, and MOAs), controlling agency, and vertical boundaries.

FSS—Flight Service Stations.

* Symbology used for NDBs, VORs, and airports is consistent with those used on a sectional chart.

Database Updates

Updates to the Jeppesen database are available every 28 days online (http://shop.garmin.com/aviation/databases/). The update programs are designed to operate on Windows®-compatible PCs and requires the included PC Interface Cable to be connected to the unit and an available serial port on your computer.

> **NOTE:** *After you perform an update to your Jeppesen database, verify that all of your flight plans (routes) in your unit are current. If there is an obsolete Jeppesen aviation point in a saved route, the route is locked and unusable. You need to create a new route with current Jeppesen database points.*

An optional FlightBook software package is available to assist with your flight record keeping. Visit the Garmin Web site at http://www.garmin.com/aviation.

Messages

Accuracy Alarm—the GPS accuracy has fallen outside of user-set value.

Alarm Clock—the alarm clock has sounded.

Antenna Shorted to Ground—the external GPS antenna has an electrical connection problem. Contact Garmin Product Support.

Approaching Target Altitude—within 1,000 feet of final VNAV target altitude.

Approaching Turn—you are nearing a turn in a route.

Approaching VNAV Profile—you are within one minute of reaching the initial VNAV decent point.

Arriving at Destination—you are nearing your destination.

Batteries Low—the batteries needs to be replaced.

Basemap Failed Unit Needs Repair—there is an internal problem with your unit. Contact Garmin Product Support to have the unit serviced.

Can't Unlock Maps—no applicable unlock code for one or more maps was found. All MapSource maps are not accessible.

Database Error—internal problem with the unit. Contact your dealer or Garmin Product Support to have the unit repaired.

Detail Maps Don't Support Routing—maps that are loaded on the data card do not support automatic route calculation.

Dragging Anchor—the distance set in the Anchor Drag Alarm is exceeded.

Lost Satellite Reception—the unit is unable to receive satellite signals.

Memory Full—unit memory is full, no further data can be saved.

Memory (RAM) Failed Unit Needs Repair—there is an internal problem with your unit. Contact Garmin Product Support to have the unit serviced.

Memory (ROM) Failed Unit Needs Repair—there is an internal problem with your unit. Contact Garmin Product Support to have the unit serviced.

Near Proximity Point—you have reached the distance set for a proximity waypoint.

No Diff GPS Location—RTCM is selected, but the unit is not receiving DGPS data.

No Roads Near Destination—the destination for the road route you tried to calculate is not near any roads. Select a different destination.

No Roads Near Starting Point—the start location for the road route you tried to calculate is not near any roads. Select a different start location.

No DGPS Position—no differential connection data is available, or not enough data is available to calculate a DGPS position.

No Tide Stations for that Area—no tide stations within 100 miles of the area.

None Found—no data matched the search criteria.

Off Course—you are off course by the distance set in the Off Course Alarm.

Proximity Memory Full—no additional proximity waypoints can be saved.

Proximity Radius Overlaps—the radius of two proximity waypoints overlap.

Route Already Exists—you have entered a route name that already exists.

Route Calculation Error—no route can be calculated.

Route Memory Full—no additional routes can be saved.

Route Truncated—uploaded route from another device has more than 50 waypoints.

Route Waypoint Memory Full—no additional route waypoints can be saved.

Steep Turn—approaching a turn that requires a bank angle in excess of 25 degrees to stay on course.

Sunrise, Switching to Day Mode—the unit is switching to Day Mode.

Sunset, Switching to Night Mode—the unit is switching to Night Mode

Track Already Exists—a saved track with the same name already exists.

Track Log Full—the track log is full and track recording was turned off. To record more track points, you need to clear the track log and turn track recording on.

Track Memory Full—no more track data can be stored. Delete the old track data to store the new data.

Track Truncated—a complete uploaded track will not fit in memory. The oldest track log points have been deleted.

User Timer Expired—the Timer Alarm value has counted down to zero.

VNAV Cancelled—VNAV function cancelled due to a change in the active route.

Waypoint Already Exists—a waypoint with the same name already exists.

Waypoint Memory Full—the unit has stored the maximum number of waypoints.

Data Field Options

The following list provides a brief description of each data field option. Some of these options are supported only by devices interfaced to your GPSMAP 196.

Accuracy—the current accuracy of your GPS determined location.

Altitude—the height above mean sea level (MSL).

Battery Timer—the time remaining on the battery before it is fully discharged.

Bearing—the compass direction from your current location to a destination.

Course—the your path of travel from your starting location to a destination.

Course to Steer—the recommended direction to steer in order to reduce cross-track error and return to the course line. Showed as **Steer.**

Cross Track—the distance you are off your course in either direction, left or right.

Dest Wpt—see **Waypoint (Destination)**.

Distance (Destination)—the entire distance, from beginning to end, of a route.

Distance (Next)—the distance to the next point on a route.

ETA (Destination)—Estimated Time of Arrival. The estimated time you will reach your destination.

ETA (Next)—Estimated Time of Arrival. The estimated time you will reach the next point on your route.

ETE (Destination)—Estimated Time Enroute. The estimated time required to reach your destination.

ETE (Next)—Estimated Time Enroute. The estimated time required to reach the next point on your route.

Location (Lat/Lon)—your current location as latitude/longitude coordinates.

Location (Selected)—your current location described in the selected units of measure (other than lat/lon).

Max Speed—the maximum speed the unit has moved since last reset.

Mov Avg Spd—see **Trip Avg. Speed (Moving)**.

Move Timer—see **Trip Timer (Moving)**.

Next Wpt—see **Waypoint (Next)**.

Odometer—the total distance traveled since the Odometer was reset.

Pointer—the arrow indicating the direction to travel to the next point on a route.

Speed—your current vehicle speed can be measured in miles per hour, kilometers per hour, or knots.

Steer—see **Course to Steer**.

Sunrise—the time at which the sun rises on this day.

Sunset—the time at which the sun sets on this day.

Time—the current time and date. It can be shown in 12-hour or 24-hour format in local time or universal (UTC) time.

Track—the direction of movement relative to a ground position. Also referred to as ground track.

Trip Avg. Speed (Moving)—the average speed while moving since the last reset of the Position Data Page. Appears as **Mov Avg Spd**.

Trip Avg. Speed (Total)—the total average speed traveled since the last reset of the Position Data Page. Shown as **Ttl Avg Spd**.

Trip Odometer—the total distance traveled since the Trip Computer was reset.

Trip Timer (Moving)—the length of time your vehicle has been in motion, since the Position Data Page was reset. Appears as **Move Timer**.

Trip Timer (Total)—the total time the unit has been tracking since the Position Data Page was reset.

Ttl Avg Spd—see **Trip Avg. Speed (Total)**.

Turn—the distance between Bearing (BRG) and Track (TRG). L indicates you should turn left. R indicates you should turn right. The degrees indicates the difference angle and the number of degrees you should turn.

User Timer—the timer you set in the Main Menu.

Velocity Made Good—the rate of closure on a destination based on your current speed and course of travel. Shown as **VMG**.

Vertical Speed—the rate of climb or descent.

Voltage—the direct current voltage level of an external power source.

Waypoint (Destination)—the last point on a route, your destination. Appears as **Dest Wpt**.

Waypoint (Next)—the next waypoint in your route. Shown as **Next Wpt**.

License Agreement and Warranty

This section of the Appendix contains information about your license agreement and warranty for the GPSMAP 196.

Software License Agreement

BY USING THE GPSMAP 196, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

Garmin grants you a limited license to use the software embedded in this device (the "Software") in binary executable form in the normal operation of the product. Title, ownership rights, and intellectual property rights in and to the Software remain with Garmin.

You acknowledge that the Software is the property of Garmin and is protected under the United States of America copyright laws and international copyright treaties. You further acknowledge that the structure, organization, and code of the Software are valuable trade secrets of Garmin and that the Software in source code form remains a valuable trade secret of Garmin. You agree not to decompile, disassemble, modify, reverse assemble, reverse engineer, or reduce to human readable form the Software or any part thereof or create any derivative works based on the Software. You agree not to export or re-export the Software to any country in violation of the export control laws of the United States of America.

Product Registration

Help us better support you by completing our online registration today! Have the serial number of your GPSMAP 196 handy and connect to our Web site (www.garmin.com). Look for the Product Registration link on our Home page.

Use this area to record the serial number (8-digit number located on the back of the box) in case your GPSMAP 196 is lost, stolen, or needs service. Keep your original sales receipt in a safe place or attach a photocopy inside the manual.

Serial Number: ___ ___ ___ ___ ___ ___ ___ ___

Contact Garmin

If you should encounter any difficulty while using your GPS unit, or if you have any questions, in the U.S.A. contact Garmin Product Support by phone: 913/397.8200 or 800/800.1020, Monday–Friday, 8 AM–5 PM Central Time; or by e-mail at sales@garmin.com. In Europe, contact Garmin (Europe) Ltd. at 44/0870.8501241.

Limited Warranty

This Garmin product is warranted to be free from defects in materials or workmanship for one year from the date of purchase. Within this period, Garmin will at its sole option repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alteration or repairs.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY 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.

IN NO EVENT SHALL GARMIN BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you.

Garmin retains the exclusive right to repair or replace the unit or software or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

Products sold through online auctions are not eligible for rebates or other special offers from Garmin. Online auction confirmations are not accepted for warranty verification. To obtain warranty service, an original or copy of the sales receipt from the original retailer is required. Garmin will not replace missing components from any package purchased through an online auction.

To obtain warranty service, contact your local Garmin authorized dealer or call Garmin Product Support for shipping instructions and an RMA tracking number. The unit should be securely packed with the tracking number clearly written on the outside of the package. The unit should then be sent, freight charges prepaid, to any Garmin warranty service station. A copy of the original sales receipt is required as the proof of purchase for warranty repairs.

Garmin International, Inc.
1200 E 151st Street, Olathe, Kansas 66062 U.S.A.
Tel. 913/397.8200
Fax. 913/397.8282

Garmin (Europe) Ltd.
Unit 5, The Quadrangle, Abbey Park Industrial Estate,
Romsey, SO51 9DL U.K.
Tel. 44/0870.8501241
Fax 44/0870.8501251

The Garmin GPSMAP 196 has no user-serviceable parts. Should you ever encounter a problem with your unit, please take it to an authorized Garmin dealer for repairs.

The GPSMAP 196 is fastened shut with screws. Any attempt to open the case to change or modify the unit in any way will void your warranty and may result in permanent damage to the equipment.

FCC Compliance

The GPSMAP 196 complies with Part 15 of the FCC interference limits for Class B digital devices FOR HOME OR OFFICE USE. These limits are designed to provide more reasonable protection against harmful interference in a residential installation, and are more stringent than "outdoor" requirements.

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

This equipment generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications if not installed and used in accordance with the instructions. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

The GPSMAP 196 does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could result in permanent damage to the equipment and void your warranty and your authority to operate this device under Part 15 regulations.

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For the latest free software updates (excluding map data) throughout the life of your Garmin products, visit the Garmin Web site at www.garmin.com.

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