Map Guide Pro™

INSTALLATION AND OPERATION INSTRUCTIONS

EAGLE®

WARNING!
USE THIS UNIT ONLY AS AN AID TO NAVIGATION. A CAREFUL NAVI-GATOR NEVER RELIES ON ONLY ONE METHOD TO OBTAIN POSI-TION INFORMATION.

Never use this product while operating a vehicle.

CAUTION

When showing navigation data to a position (waypoint), this unit will show the shortest, most direct path to the waypoint. It provides navigation data to the waypoint regardless of obstructions. Therefore, the prudent navigator will not only take advantage of all available navigation tools when travelling to a waypoint, but will also visually check to make certain a clear, safe path to the waypoint is always available.

The operating and storage temperature for your unit is from -4 degrees to +167 degrees Fahrenheit (-20 to +75 degrees Celsius). Extended storage temperatures higher or lower than specified will cause the liquid crystal display to fail. Neither this type of failure nor its consequences are covered by the warranty. For more information, consult the factory customer service department.

All features and specifications subject to change without notice.

Eagle Electronics may find it necessary to change or end our policies, regulations, and special offers at any time. We reserve the right to do so without notice.

All screens in this manual are simulated.

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

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

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the factory customer service department for help.

Specifications

Dimensions	6.75" L x 2.25" W x 1.625" D
Display	160 H x 104 W pixels
Power	5-35 vdc
Waypoints	750
Routes	99
Waypoints per Route (maximum)	99
Total Waypoints used in Routes	1500
Icons	1000
Savable Plot Trails	3
Maximum Plot Trail Points	3000 per trail

INTRODUCTION

Welcome to the exciting world of GPS! Whether you're a first-time user or a professional navigator, you'll find the Map Guide Pro is a full-featured GPS receiver at a price that was impossible just a few years ago. The Rockwell® receiver built inside has 12 channels that will track all of the satellites that are in view of your location. It's acquisition time and tracking ability are second to none in its class.

The Global Positioning System (GPS) was developed by the United States Department of Defense as a 24-hour a day, 365 days a year global navigation system for the military. Civilian availability was added (but with less accuracy) using the same satellites. Twenty-four satellites orbit the Earth. Three of these satellites are spares, unused until needed. The rest virtually guarantee that at least four satellites are in view of anyplace on Earth at all times.

The system requires three satellites in order to determine a position. This is called a 2D fix. It takes four satellites to determine both position and elevation, (your height above sea level - also called altitude.) called a 3D fix.

Remember, the unit must have a clear view of the satellites in order to receive their signals. Unlike radio or television, GPS works at very high frequencies. The signals can be blocked easily by trees, buildings, even your body. Fortunately, they do travel through glass and plastic, so your receiver will work in the car, if it has a clear view of the satellites through the windshield or side windows. Let someone else drive if you use it in a car or other vehicle.

Never use this GPS receiver while operating a vehicle!

The first time you use this unit, walk outside and turn it on in your backyard, an open field or park. Once it locks onto the satellites, you can experiment with it around buildings and trees. This will give you some idea of its sensitivity to blockage.

Like most GPS receivers, this unit doesn't have a compass or any other navigation aid built inside. It relies solely on the signals from the satellites to calculate a position. Speed, direction of travel, and distance are all calculated from position information. Therefore, in order for it to determine direction of travel, you must be moving and the faster, the better. This is not to say that it won't work at walking speeds - it will. There will simply be more "wandering" of the data shown on the display.

S/A - What is it?

Another factor that greatly influences the receiver's ability to determine position is SA. The United States government intentionally degrades the satellites signal for civilian users. They introduce small errors into the signals that makes the GPS receiver less accurate. These errors are called selective availability, or SA. How bad is it? They guarantee that the position reported by a GPS receiver that meets their specifications is within 100 meters horizontally and 150 meters vertically 95% of the time. (The position can be better than that or worse than that the other 5% of the time.) In other words, the position shown on your receiver is within 100 meters of your actual position, 95% of the time. That's over 300 feet! Not exactly pinpoint accuracy, but then few people need positioning accuracy greater than this. However, if you do want better performance, (and who doesn't?) many manufacturers (including Eagle) sell a DGPS receiver that attaches to your GPS receiver. The DGPS system transmits correction signals that nullify the effects of SA. The DGPS receiver takes signals from these land-based transmitters and gives them to the GPS receiver which then uses them to show a more accurate position. The ironic part is the federal government implemented SA and is also operating many DGPS transmitters. (You can use the signals from all of the Coast Guard DGPS stations for free, by the way.) The downside to this is it requires another piece of electronic gear (the DGPS receiver) which usually isn't small enough to carry with you, but will work nicely on a vehicle. And you have to be close enough to a station to receive the DGPS signals.

Don't Get Lost

Generally, you find that using your GPS receiver without DGPS is both easy and amazingly accurate. It's easily the most accurate method of electronic navigation available to the general public today. Remember, however, that this receiver is only a tool. Always have another method of navigation available, such as a chart or map and a compass. It's a good idea to carry spare batteries with you, especially if you're venturing into unknown territory.

Also remember that this unit will always show navigation information in the shortest line from your present position to a waypoint, regardless of terrain! It only calculates position, it can't know what's between you and your camp, for example. It's up to you to safely navigate around obstacles, no matter how you're using this product.

GETTING STARTED
Power
The Map Guide Pro operates from AA batteries, a DURACELL® NiMH rechargeable battery, or from 5 to 35 volts DC using the external power cable. If the power cable is used, the Map Guide Pro automatically switches to it if the external power is greater than the battery voltage. If for any reason the external power fails, the unit automatically switches to the batteries.

BATTERIES
The unit requires four AA batteries. We recommend you use alkaline batteries for the best trade-off between battery life and cost. However, you can use nickel-cadmium (ni-cad), or lithium batteries. You can also use rechargeable alkaline batteries such as RayOVac® Renewals®. With the exception of lithium, none of the above batteries will last as long as standard alkaline batteries. We recommend DURACELL® brand, but others will work. Do not use "heavy-duty" batteries or any type other than the ones listed above. Do not mix different types of batteries. (For example, don't use both alkaline and ni-cad batteries at the same time.)

Battery Installation
First turn the unit so that its back is facing you. Push the two tabs to the left and remove the battery cover as shown at right. Install the batteries according to this diagram. (There's a decal in the battery compartment showing the correct polarity, also.) Replace the battery compartment cover and the unit is ready for use.
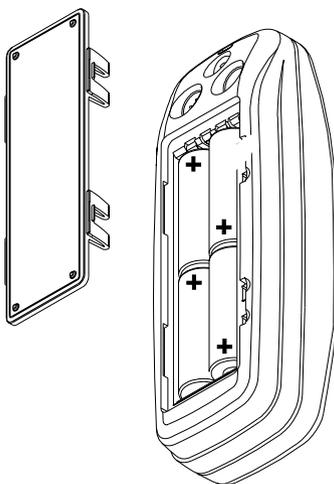
NiMH Battery
The DURACELL® DR-121 nickel-metal hydride (NiMH) battery replaces the four standard batteries. It is sold as an accessory, (model BR-1) which includes a charger custom designed for the DR-121. The battery never needs to be removed from the unit, since the charger connects to the GPS receiver and charges the DR-121. You can even use the receiver while the battery is charging!

To install the NiMH battery, remove the battery cover and place the battery into the compartment as shown on the next page. It will only fit one way, so if it's difficult to install, simply turn it over and drop it into place. Replace the compartment cover and follow the charging instructions included with the BR-1.

(Note: The DR-121 is the only battery that can be recharged in this unit! Using the external power cable alone does not charge the battery! You must use a charger supplied by Eagle in order to charge the battery. Also, this charger will only charge a DR-121. It will not charge any other type of battery, including ni-cads or rechargeable alkallines.)
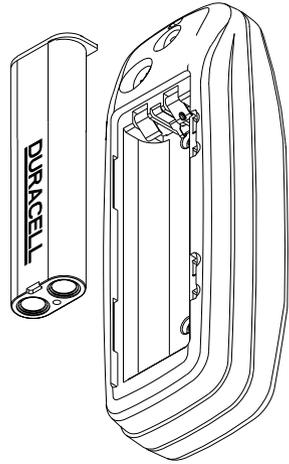
OPERATION
Keyboard
There are 12 keys on the keyboard. You navigate through the menus, adjust the chart's cursor, and enter data using the arrow keys. The five major modes of operation are accessed using the PAGES key. Press the MENU key to select or adjust a feature from a list. The Z-IN and Z-OUT keys zoom-in or zoom-out the view on the plotter screen. The ENT and EXIT keys are used to enter or clear data or screens. Save and edit waypoints using the WPT key. The PWR key turns the unit on and off. Pressing it once while the unit is operating turns on the screen's backlight. To prevent an acci-
dental shutdown, you must hold the PWR key down for a few seconds in order to turn the unit off.
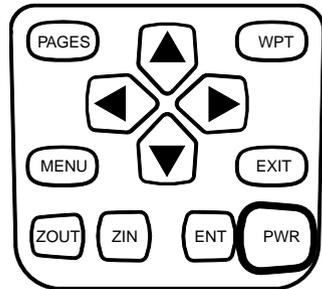
Menus
Most of the unit's features are found on "menus'. You can view the menus by pressing the MENU key. This product has "Intelligent Menus". There are many menus that pertain to only the map, for example. When you press the MENU key and the plotter is showing, menu items for the plotter show in addition to the normal menus. For example, if the navigation screen is showing, and you press the MENU key, plotter menu items won't show on the list. This helps you find the needed item without scrolling through

unnecessary menus.

Turning Power On

To turn the unit on, simply press the PWR key. A GPS logo screen appears, then the screen similar to the one at right appears. Read the message on the screen, then press the EXIT key to erase it or wait a few seconds and it automatically clears. The screen shown below appears next.

DO NOT RELY ON THIS PRODUCT AS YOUR PRIMARY SOURCE OF NAVIGATION

THE OPERATOR IS RESPONSIBLE FOR USING OFFICIAL GOVERNMENT CHARTS AND PRUDENT METHODS FOR SAFE NAVIGATION

PRESS EXIT

Satellite Status Screen

This screen appears each time you turn the unit on. It shows a graphical view of the satellites that are in view. Each satellite is shown on the circular chart relative to your position. The point in the center of the chart is directly overhead. The small inner ring represents 45° above the horizon and the large ring represents the horizon. North is at the top of the screen. You can use this to see which satellites are obstructed by obstacles in your immediate area if you hold the unit facing north.

The GPS receiver is tracking satellites that are surrounded by a black box. If the satellite number is not surrounded by a box, then the receiver hasn't locked onto that satellite and it isn't being used to solve the position.
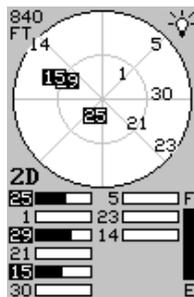
Beneath the circular graph are the bar graphs, one for each satellite in view. Although the unit has twelve channels, it dedicates one channel per visible satellite. Therefore, if only six satellites are visible, only six bar charts show at the bottom of the screen. The higher the bar on the graph, the better the unit is receiving the signals from the satellite.

The number in the upper left corner is the "expected horizontal position error" or expected error from a benchmark location. In other words, if the expected error shows 50 feet, then the position shown by the unit is estimated to be within 50 feet of the actual location. However, this number is only valid if you're using DGPS or if S/A is turned off. Due to S/A, the accuracy can only be less than 100 meters, 95% of the time, per U.S. government specifications. Although the expected error is not accurate unless you have a DGPS receiver, it does give you an indicator of the fix quality the unit currently has. The smaller the expected error number, the better (and more accurate) the fix is.

If the expected error is flashing, then the unit has not locked onto the

satellites, and the number shown is not valid.
The fix indicator on the left center shows either 2D or
3D. A 2D fix means the unit has locked onto three sat-
ellites and has calculated its position. A 3D fix means
the unit has locked onto at least four satellites and has
calculated both the position and altitude. (Remember,
it takes three satellites to determine the position - four
to determine position and altitude.) If neither 2D nor
3D are showing, then the unit doesn't have the posi-
tion or altitude.

A battery level indicator on the lower right side of the screen shows ap-
proximately how much life is in the batteries. This runs from "F" (fully
charged) to "E" (expired).

A light bulb indicator at the top right corner of the screen appears when
the backlights are on.

Finding Your Position
Auto Search
To lock onto the satellites, the GPS receiver needs to know it's current
position, local time, and date. (Elevation (altitude) is also used in the equa-
tion, but it's rarely required to determine a position.) It needs this data so
that it can calculate which satellites should be in view. It then searches for
only those satellites. When your GPS receiver is turned on for the first
time, it doesn't know what your position or elevation (altitude) is. It does
know the current UTC time and date since these were programmed into it
at the factory and an internal clock keeps the time while the unit is turned
off. It begins searching for the satellites using the above data that it ac-
quired the last time it was turned on. This probably was at the Eagle fac-
tory. Since it's almost certain that you're not at the Eagle factory, it's prob-
ably looking for the wrong satellites. If it doesn't find the satellites it's look-
ing for after five minutes, it switches to Auto Search. The receiver looks for
any satellite in the sky. Due to advanced technology, the auto search time
has shrunk to about five minutes, so the longest time you should ever
have to wait is ten minutes from the time you turn the unit on until it locks
onto the satellites and shows a position. Once the unit locks onto the
satellites, it should take less than a minute to find your position the next
time it's turned on, provided you haven't moved more than approximately
100 miles from the last location it was used.

Manual Initialization
If you don't want to wait for the Auto Search, then you may be able to
speed up the initialization process by using the manual initialization fea-

ture. Using this feature tells the unit it's approximate position. Once it knows it's location, it determines exactly which satellites should be in view and starts looking only for those satellites.

To manually initialize the unit, press the MENU key. Now press the down arrow key until the "GPS SETUP" label is highlighted. Press the right arrow key. The "INIT GPS" (Initialize GPS) label is highlighted. Press the right arrow key again. The screen at right appears. Use the arrow keys to move the crosshairs to your approximate location on the map. You may use the ZOUT key to zoom the map out. This will make it easier and faster to find your location on the map. Once you have the crosshairs on your location, press the ENT key. The unit returns to the satellite status screen.
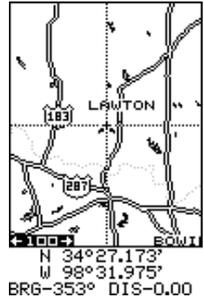
Using the manual initialization method loads a position that's close to yours into the GPS receiver. It should now have position, time, and date, thereby giving it the data it needs to determine which satellites are in view. Once the satellites are known, the receiver searches for only those satellites, making a lock faster than an auto search method.

Position Acquisition
When the receiver locks onto the satellites and calculates a position, it shows the message "Position Acquired" on the screen. All position and navigation data flashes until the unit acquires a position. *Do not rely on any data that is flashing!* When the numbers are flashing, they represent the last known values when the unit lost it's lock on the satellites.

(Note: The altitude data may still flash even if the unit shows a "Position Acquired" message and all other data is not flashing. The unit must be locked onto at least four satellites to determine altitude. It only takes three satellites to determine position. You can navigate with this unit if the altitude is flashing, simply ignore the altitude display until it quits flashing.)

REMEMBER, DO NOT NAVIGATE WITH THIS UNIT UNTIL THE NUMBERS STOP FLASHING!

Once the unit has acquired the satellites and is showing a fix on the status screen, or the position acquired message appears, it's ready for use.

POSITION/NAVIGATION SCREENS

This unit has four modes: status, map, navigation, and window groups. Use the PAGES and arrow keys to switch between the different screens. The four screens that show by default are shown below.

STATUS   NAVIGATION   MAP   WINDOWS
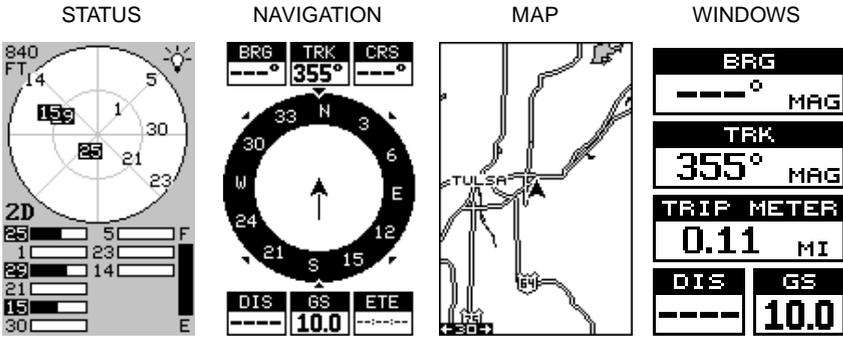
To change modes, simply press the PAGES key. A screen similar to the one at right appears. Use the up or down arrow keys to change modes. (The windows mode is shown as "groups". Group "A" is the first windows group.)

Press the right arrow key while the above menu is showing to switch between different versions of each mode. When the desired screen appears, press the EXIT key to erase the menu.

Navigation Screens

There are two different navigation screens. Nav screen number one shows a graphical view of your trip, Nav screen number 2 shows all navigation details in large digital numbers. You can also customize both navigation screens to show data other than the default. See the "Programming Boxes" section for more information.

Nav Screen #1

This screen has a compass rose that shows not only your direction of travel, but also the direction to a recalled waypoint. The navigation screen looks like the one at right when you're *not* navigating to a waypoint. Your position is shown by an arrow in the center of the screen. Your trail history, or path you've taken is depicted by the line extending from the arrow. The arrow pointing down at the top of the compass rose indicates
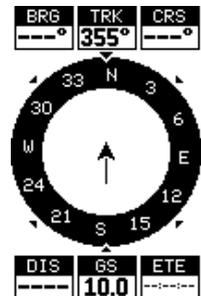
the current track (direction of travel) you are taking. This is also shown in the "TRK" (track) box at the top of the screen. On the example shown at right, the track is 355°. The current ground speed (GS) shows in the box in the lower center of this screen.

When navigating to a waypoint, Nav screen number one looks like the one at right. Bearing to the destination waypoint is in the box in the upper left corner. Bearing is also shown by the large arrow pointing up towards the compass, above the present position arrow. Distance from the present position to the waypoint (DIS) shows beneath the compass on the lower left side of the screen.
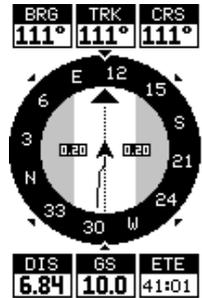
Lines on either side of the present position show the current cross track error range. Cross track error is the

distance you are off-course to the side of the desired course line. The course line is an imaginary line drawn from your position when you started navigating to the destination waypoint. It's shown on the screen as a vertical dotted line. The default for the cross track error range is 0.25 mile. For example, if the present position symbol touches the right cross track error line, then you are .25 mile to the right of the desired course. You need to steer left to return to the desired course. The cross track error is

also shown in the "XTK" box. In the upper right corner is the course (CRS) box showing the direction from your starting position to the waypoint. Remember, a course is a proposed path from the starting position to the destination. Track is your actual direction of travel.

A circle depicting your destination (waypoint) appears on the screen as you approach the waypoint as shown on the screen at right.

Nav Screen #2
This navigation screen shows all navigation information in large digital numbers. To view this screen, press the PAGES key, then press the up arrow key until the "NAV1" label is highlighted. While it's highlighted, press the right arrow key. The screen shown at right appears. Press the EXIT key to erase the menu.

This screen is composed of eight digital boxes. Track (TRK) and ground speed (GS) data are all that show if you're not navigating to a waypoint. If you are navigat-

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ing to a waypoint, then bearing (BRG), distance to waypoint (DIS), estimated time en route (ETE), cross track error (XTK), destination arrow, and the CDI also operate. See below for more information on the CDI.

The destination arrow shows the direction to the destination when the top of the screen is pointing in your direction of travel.

Course Deviation Indicator (CDI)
Once navigation to a waypoint is established, the CDI shows your distance to the left or right of the desired course. The vertical line in the box shows both the direction you must steer to get back on course and the distance to the course line. For example, if you're trav-

elling straight towards the destination, from the start, then the line stays in the center. If you drift off course to the right, the line moves to the *left*. This signifies that you need to steer to the left to get back on course. This is called "chasing the needle". If you steer towards the line (needle), you'll always be heading in the correct direction to get back on course.

The CDI's range shows beneath the CDI label. On the above screen, the CDI range is .20 mile, which is the default. You can adjust the range by selecting the "ALARMS/CDI" label on the main menu. This is also shown by the dotted lines at the far left and right side of the CDI. If the solid line is on either of the dotted lines, then you are 0.20 mile off course. Remember, if the line moves to the left, then you are too far to the right of the desired course line and vice-versa.

Using the CDI with a mapping screen helps you visualize your position in relation to the course. The screen on the right shows that we are off course to the right. The vertical bar has moved to the left side of the CDI, showing the direction to the desired course line. The CDI gives you a quick, easy to read visual indicator of your relationship between your direction of travel and the desired direction.

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Map

The Map Guide Pro has a ground map of the world built inside. This map has the majority of its detail in far southern Canada, the continental United States and Hawaiian islands, northern Mexico, the Bahamas, and Bermuda. The map screens show your course and track from a "birds-eye" view. If you're navigating to a waypoint, the map shows your starting location, present position, course line, and destination. You don't have to navigate to a waypoint, however, to use the map.

Using the map is as simple as pressing the PAGES key, then highlighting "MAP 1". A screen similar to the one at right appears. The arrow flashing in the center of the screen is your present position. It points in the direction you're travelling. The solid line extending from the arrow is your plot trail, or path you've taken. The plotter's range shows in the lower left corner of the screen. In this example, the plotter's range is two miles from the left edge of the screen to the right.

There are three different mapping screens. To view the other map screens, press the PAGES key, highlight the MAP label, and press the right arrow key until the desired map screen appears. Press the EXIT key to erase the menu. Map-2 (shown below) has navigation data added at the bottom of the screen, beneath the map. The data includes bearing to waypoint (BRG), track (TRK), and distance to waypoint (DIS).

MAP-1   MAP-2   MAP-3
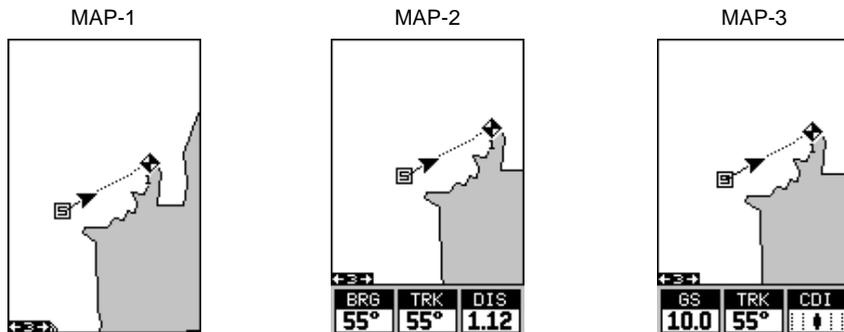

Map-3 is similar to Map-2. It shows ground speed (GS), track (TRK), and the CDI at the bottom of the screen.

The Z-IN and Z-OUT keys zoom-in and out all maps to enlarge or reduce their coverage area. The available ranges are: 0.1, 0.15, 0.2, 0.3, 0.4, 0.6, 0.8, 1, 1.5, 2, 3, 4, 5, 6, 8, 10, 15, 20, 30, 40, 60, 80, 100, 150, 200, 300, 400, 600, 800, 1000, 1500, and 2000 miles.

Cursor

Pressing an arrow key turns on two dotted lines that intersect at the present position symbol. These lines are called a "cursor" and have a variety of uses.

To turn the cursor on, simply press the arrow key in the direction you want the cursor to move. This lets you view areas on the plotter that are away from your present position. The zoom-in and zoom-out keys work from the cursor's position when it's active - not the present position. You can zoom in on any detail, anywhere. The cursor can also place icons and waypoints.
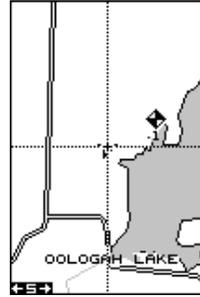
Press the EXIT key to erase the cursor. The unit centers your present position on the screen after erasing the cursor.

Map Setup

The map has many customization options. To change them, first press the MENU key while a map is showing on the screen. The map setup screen is highlighted. Press the right arrow key. A screen similar to the one at right appears.
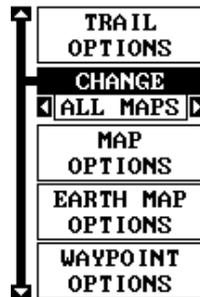
Change Maps

Changes made to the map using the options in the Map Setup is normally made to all map screens. The change can be limited to the map screen currently in use, however, by switching the "All Maps" to "This Map" in the "Change" menu. To do this, simply highlight the "Change" label, then press the right arrow key. To switch back, repeat the above.

Map Options

The following map options are listed under the "Map Options" menu: Map Orientation, Auto Zoom, View Destination, Range Rings, and Grids.
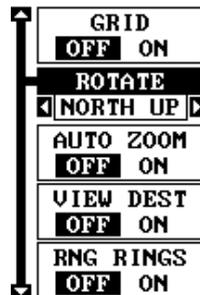
Map Orientation

By default, this receiver shows the map with north always at the top of the screen. This is the way most maps and charts are printed on paper. This is fine if you're always travelling due north. What you see to your left corresponds to the left side of the map, to your right is shown on the right side of the map, and so on. However, if you travel any other direction, the map doesn't line up with your view of the world.

To correct this problem, a track-up mode rotates the map as you turn. Thus, what you see on the left side of the screen should always be to your left, and so on. A course-up mode keeps the map at the same orientation as the initial bearing to the waypoint.

In the north-up view shown at right, we're travelling southeast towards camp, saved as waypoint number 14. In this view, the present position indicator appears to move towards the lower right corner of the screen.

NORTH-UP
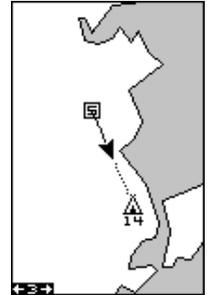
In the track-up view, the present position moves straight towards the top of the display. A "N" shows to help you see which direction is north when the track-up mode is on. Remember, in the track-up mode, the screen rotates as you change direction. It always keeps your direction of travel (track) heading towards the top of the screen.

TRACK-UP
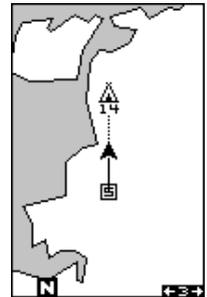
In the course-up mode, the screen is locked into your original bearing to the recalled waypoint, regardless of your track.

COURSE-UP
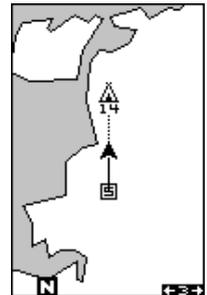
To select the desired mode, first press the MENU key, select "MAP 1 SETUP", then select "MAP OPTIONS". Finally, select "ROTATE" and press the right or left arrow key until the desired mode appears. Press the EXIT key to erase this menu.

AUTOZOOM
This receiver has an autozoom feature that eliminates much of the button pushing that competitive units force you to make. It works in conjunction with the navigation features. First, recall a waypoint. (See the waypoint section for more information on navigating to a waypoint.) Then, with the autozoom mode on, the unit zooms out until the entire course shows, from the present position to the destination waypoint (recalled waypoint). As you travel towards the destination, the unit automatically begins zooming in, one zoom range at a time, keeping the destination on the screen.

The screens below show a slice of the progression of a trip near a lake. Screen number one is the start and is on the 6 mile range. Intermediate stages progressively zoom in as it gets closer to the destination.

1

2

3

4
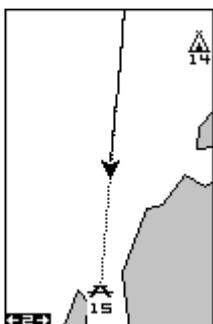
5
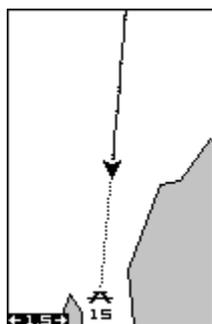
6

To use the autozoom feature, first press the MENU key, select "Map 1 Setup", then "Map Options". Highlight "Auto Zoom", then press the right arrow key to turn it on. Press the EXIT key repeatedly to erase the menus.

VIEW DESTINATION

The GPS receiver normally centers the present position on the screen and moves the map past it. If a waypoint is recalled, the unit can center the waypoint on the screen, instead of the present position. To do this, press the MENU key, select "Map 1 Setup", then "Map Options". Highlight "View Dest", then press the right arrow key to turn it on. Press the EXIT key repeatedly to erase the menus.
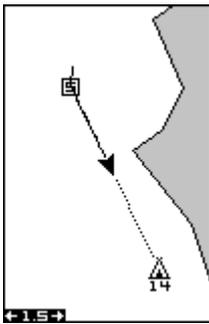
VIEW DESTINATION
OFF
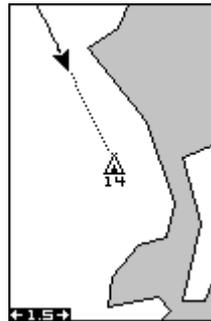
VIEW DESTINATION
ON

Range Rings/Grid Lines

The map screen can be customized with rings that are 1/4 of the range and/or grids that divide the plotter into equal segments of latitude and longitude. To do this, press the MENU key, select "Map 1 Setup", then "Map Options". Highlight the desired option, then press the right arrow key to turn it on. Press the EXIT key repeatedly to erase the menus. A sample screen of each type shows below.
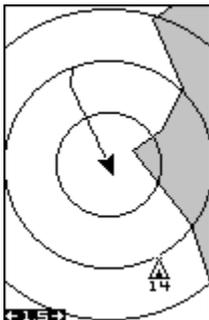
RANGE RINGS
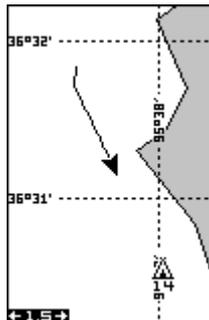
GRID
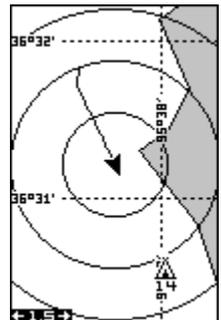
BOTH RINGS & GRID

EARTH MAP OPTIONS

The earth map consists of the built-in background map of the world. To change the Earth map options, first press the MENU key, then select the Earth Map label. Press the right arrow key. The screen shown at right appears.

Earth Map On/Off

The background map can be turned on or off using the "Earth Map" menu. The earth map is the background map that shows on the map screens. Simply highlight the menu, then press the left arrow key to turn it off.
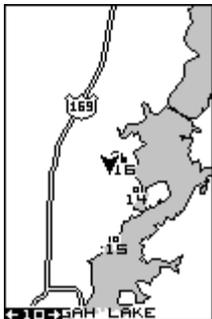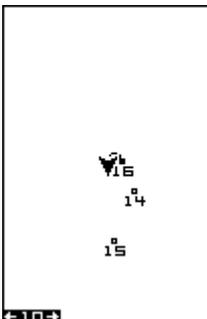
EARTH MAP ON   EARTH MAP OFF

Text Labels

Select "Map Text" to turn all names on the map (such as Lake Tahoe or Mississippi River) off or on. The default is "on". Press the left arrow key to turn them off.

Locations

Normally, text disappears as you zoom out. This declutters the screen, making it easier to see significant map detail. Turning "Locations" on from the earth map menu places a dot on the screen where a text label should be when the screen is zoomed out. The arrows on the screen at right show two locations where, if zoomed in, text will show.

Map Detail

The detail shown on the background map diminishes as the screen is zoomed out. This prevents cluttering of the display, or overlapping of text and graphics which can make it unreadable. There are two detail levels:

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normal and high. The difference between the two shows below. The screen on the left is normal detail, on the right is high detail. Both screens are on the 40 mile range. Normally, you'll only see a difference in detail when the unit is zoomed out to the 30 mile range or higher.
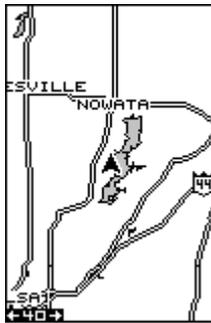
NORMAL DETAIL
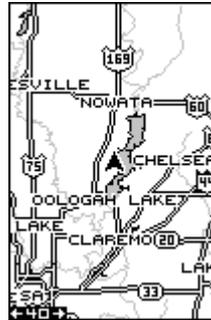
HIGH DETAIL

To change the map's detail setting, select "Map Detail" from the earth map menu, then press the right arrow key.

Gray Fill
When this unit is first turned on, all water (lakes, oceans, rivers) is filled with gray to distinguish it from land, which is clear. (See below) To make the land fill with gray and water remain clear, select the "Gray Fill" label from the Earth Map menu, then press the left arrow key. Press the EXIT key repeatedly to return to the mapping screen.
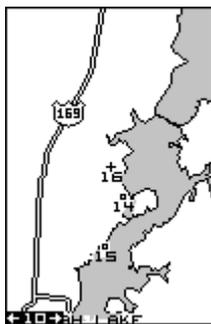
WATER FILLED
WITH GRAY
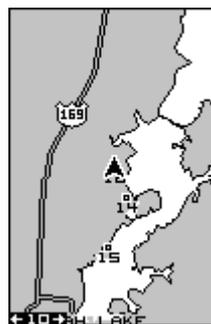
LAND FILLED WITH
GRAY

Normally, you'll want to fill water with gray when you're using the GPS receiver on land and fill land with gray when you're using it on the water.

TRAIL OPTIONS

The line extending from the present position symbol is called a plot trail. You can customize the plot trail and save trails using the trail options menu. To use it, press the MENU key, select "MAP SETUP", then "TRAIL OPTIONS". The screen at right appears.
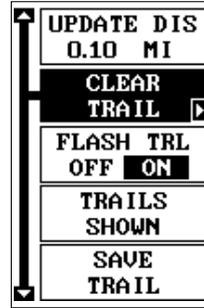
Clear Trail

To erase the current plot trail from the screen, select Clear Trail from the Trail Options menu. A message appears, asking if you really want to erase the plot trail.

Follow the instructions on the screen. When the trail is erased, the unit returns to the map screen.

Flash Trail

By default, the plot trail flashes once per second. This typically makes it easier to see the plot trail against the background map. To turn the flashing off, select "FLASH TRL" from the trail options menu. Press the left arrow key to turn it off.

Update Options

By default, the plotter places a dot on the screen every 3 seconds to create the plot trail. You can change this time from once per second to once every thirty minutes. The plot trail can also be updated by distance instead of by time. The distance update rate can be set from 0.01 to once every 10 miles.

From the trail options menu, choose "UPDATE BY" to change the update rate or type. To change the rate or distance, simply select either the "UPDATE RATE" or 'UPDATE DIS" menus as appropriate, use the left or right arrow keys to adjust it, then press the EXIT key to erase the menu.
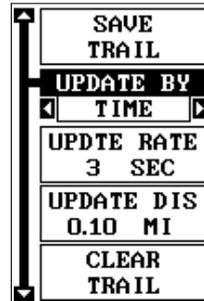
PLOT TRAILS - Save Trail

This unit automatically saves the current plot trail in memory when you turn it off. You can save two other trails in memory. To save your current plot trail in a specific memory location, choose "SAVE TRAIL" from the "TRAIL OPTIONS" menu. The screen shown at right appears. Highlight the desired number that you wish to save the current trail under, (i.e. "Trail 1 or Trail 2) and press the right arrow key. Your current trail is saved. Press the EXIT key to erase this menu.
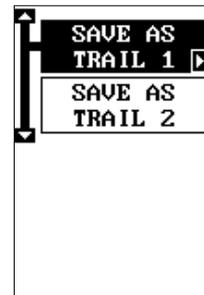
PLOT TRAILS - Trails Shown

The current plot trail shows on the plotter by default. To place a previously saved trail onto the plotter, choose "TRAILS SHOWN" from the Trail Options menu. The screen shown at right appears. Highlight the desired trail on this screen, then press the right arrow key to select it. Press the EXIT key to erase this menu. The selected plot trail shows on the plotter.
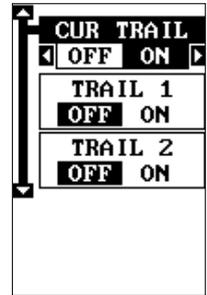
ICONS

The plotter has 28 symbols or "icons" available that can be placed anywhere on the screen. They can be used to mark fishing or hunting locations, landmarks, boat ramps, and virtually any point of interest. An icon can be placed at your present position or at the cursor's location.

Place Icon - Present Position

To place an icon at your present position, simply press the ENT key while the mapping screen is on. The screen shown at right appears. Use the arrow keys to highlight the desired icon. Now press the ENT key again. The mapping screen reappears with the icon showing at the position you were at when the ENT key was pressed.
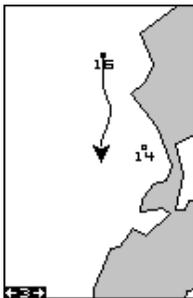
MAP-1 SCREEN
PRESS ENT KEY

SELECT ICON
PRESS ENT KEY
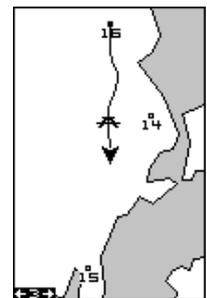
ICON PLACED
AT POSITION.

Place Icon - Cursor Position
To place an icon at the cursor's position, first use the arrow keys to move the cursor to the location that you wish to place the icon. Next, press the ENT key. Now select the icon using the arrow keys. While it's selected, press the ENT key. The map reappears with the icon placed at the cursor crosshairs. Press the EXIT key to erase the cursor. On the screens shown below, the tent icon was placed at the cursor's location.
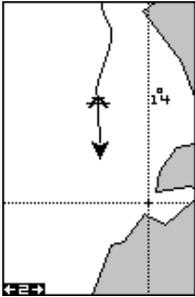
MOVE CURSOR
PRESS ENT KEY

SELECT ICON
PRESS ENT KEY
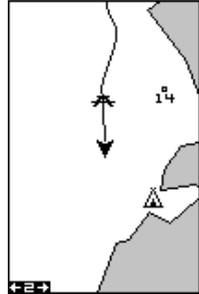
ICON PLACED AT
CURSOR POS.

Icon Options
Icons can be erased from the plotter individually, all of a specific type, or all at once. They can also simply be turned off without erasing them. To make changes to the icons, press the MENU key, then select MAP SETUP, and finally select Icon Options. The screen shown at right appears.

The first menu (ICONS OFF/ON) simply turns all icon symbols off or on. This doesn't erase the icons, it simply "hides" the icons from the map. You can use this feature to temporarily de-clutter the display.

The DEL ALL ICONS selection does erase all of the icons from memory, Use this only if you want to erase all icons that have been placed on all map screens.

To erase only a certain type of icon, select the DEL ICON TYPE menu. The icon menu appears. Highlight the icon style that you want to erase from memory, then press the ENT key. The unit returns to the map screen with only the selected icons erased.

You can delete individual icons by selecting the DEL FROM MAP menu from the Icon Options menu. Once this menu is selected, the unit returns to the plotter screen with the cursor activated as shown at right. Use the arrow keys to move the cursor to the icon that you want to erase. Once the crosshairs are on top of the icon, press the ENT key. The icon is immediately erased. Press the EXIT key to erase the cursor.
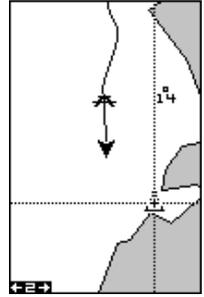
Map Downloading

The Map Guide Pro has a background map of the world permanently installed inside. You can send an enhanced map from the enclosed CD-ROM to the unit using a personal computer.
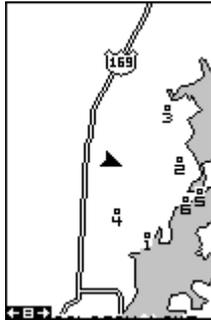
BACKGROUND MAP
ONLY

BACKGROUND MAP
WITH IMS MAP

Currently, the MapSelect CD has the following databases:

IMS SmartMap™ data covers the 48 contiguous states and are broken down into 64 different mapping regions. Contained in this database are the names and locations of over 140,000 cities; 30,000 national, state and county parks; 120,000 inland bodies of water plus coastal waters out to 25 miles; as well as nearly all state and federal highways, interstates and routes.

IMS WorldMap™ data covers 35 specific regions around the globe including Canada, Europe, Indonesia and Australia. Contained in this database are the names and locations of cities, towns, provinces and states, plus major roadways including two- and four-lane highways, inland waterways and coastal hydrography.

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Coastal Navaid data covers coastal regions of the 49 U.S. States (excluding Hawaii), the District of Columbia, the Great Lakes and many large coastal rivers and other large inland lakes. Contained are approximately 60,000 marine navigation aids. Each navigation aid is displayed as a small symbol, with information useful to the navigator (including light type (flashing or continuous), light color, and other aid markings) below the symbol.

To use one of these, install the software from the CD-ROM onto your PC compatible computer according to the insturctions supplied with the CD. Next, connect the cable supplied with this unit from a serial port on the computer to the GPS receiver. Now turn the unit on and adjust the communication port baud rate to its highest level (Press MENU - SYSTEM SETUP - COM PORT SETUP). Set the parity to "none" and the data bits to "8".

Start the GDM 16 program on the computer. Click on the "GPS" label, then click on "Options". Select the com port that the GPS cable is connected to and click "OK". Now click on the "GPS" label, then "Initialize". This starts the communication between the GPS unit and the computer. If the communications fail, try switching the baud rate on the Map Guide Pro to a lower setting. Once the communications are established, click on the "Map Select" tab. Choose a memory partition to download a map into, then choose a map. If you have problems, click on "Help". There is extensive help available on the GDM-16 program.

TRANSFERRING MAP DATA
Using the GDM Software, you may transfer up to two maps of your choice to your GPS Unit.

1. Click on the MapSelect Tab.
2. Select a map by clicking on the desired database button (IMS SmartMap, IMS WorldMap, or Coastal Navaids). A map appears on the screen . Click the desired area that you want to download to the GPS unit.
3. Select a memory partition by clicking on Memory Partition 1 or 2. (Note: Any data already present in a selected memory partition will be overwritten. When transferring map data larger than 1 megabyte, both memory partitions are automatically selected.)
4. Click the Transfer Map Data Button.

A status bar appears on both the PC and the GPS unit's screen. When the bar disappears, the transfer is complete. You'll be able to see the differnce when the unit is zoomed in to ranges of ten miles or less.

WINDOWS
The windows feature provides ten different data screens chosen for their broad range of navigation information and ease of use.

To use the windows feature, press the PAGES key, then highlight the "GROUP A" label at the bottom of the screen. Group A is visible in the background when you switch to the windows group. Press the left or right arrow key to switch between all off the groups. When the desired group appears, press the EXIT key to erase the Pages menu. A summary of the groups follows. Note that many of the groups have navigation data that require navigation to a waypoint in order to show data. See the waypoint section for information on setting up the unit for waypoint navigation.
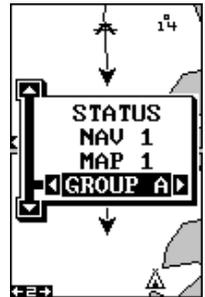
Group A
This screen has two maps, one above the other. Each map works separately from the other. For example, the top map has autozoom turned on, while the bottom map doesn't. To zoom in or out on the bottom map, simply press the ZIN or ZOUT keys. The main menu also has selections for the upper map and lower map setups.
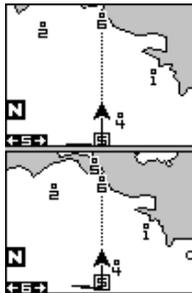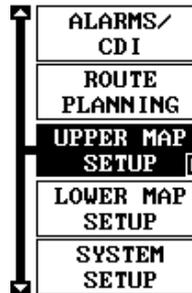
GROUP A   MAIN MENU

Group B

This screen has a map in the track-up mode on the top half with bearing (BRG), distance to go (DIS), track (TRK) and the CDI on the lower half. (See page 10 for an explanation of the CDI.)
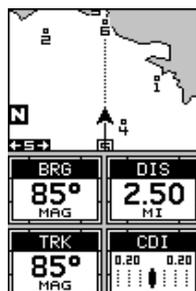
Group C

A half screen map in the track-up mode again appears at the top. The CDI shows in the middle of the screen. Your present course (CRS) shows at the top of the CDI. Track (TRK) and distance to go (DIS) show at the bottom of the screen.
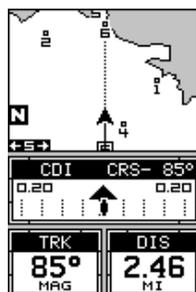
Group D

This screen is the same as group C except ground speed (GS) replaces distance to go (DIS) in the lower right corner.
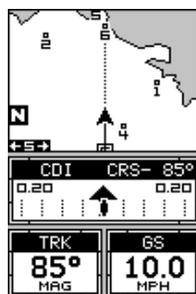
Group E

A CDI combined with digital boxes makes up this screen. Beneath the CDI are bearing (BRG), distance to go (DIS), track (TRK), ground speed (GS), and altitude (ALT).

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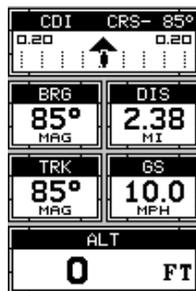
Group F

This screen shows your present position (POSITION), bearing (BRG), distance to go (DIS), track (TRK), and ground speed (GS).

Group G

The group I screen shows DGPS information. There must be a DGPS receiver connected to the unit in order to use this screen.

The DGPS corrections at the top of the screen shows a list of the satellites in view. The satellite's number is follow by an identifier showing its status. They are as follows:

OK   DGPS corrections are in use by GPS receiver and corrections

        are available.

OLD   Unit hasn't received corrections in last 60
        seconds.

NA   No correction available.

The DGPS station's ID number, frequency, bit rate, signal strength, signal to noise ratio (SNR), and time since the GPS receiver received the satellite corrections (AGE) all show at the bottom of this screen.

Group H

This is a time screen. An analog clock shows at the top, followed by a digital clock showing your local time. The clock's alarm setting shows in this window, also. UTC time shows at the bottom of this screen. (UTC is the time at the prime meridian. It used to be called GMT.) To set the clock alarm, first press the MENU key, then

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select "CLOCK ALM SETUP" and press the right arrow key. The screen shown below left appears. Now press the right arrow key. The screen below center appears. Using the arrow keys, enter the alarm's time. Press
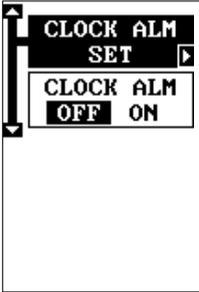
CLOCK ALARM
MENU
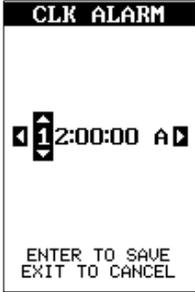
CLOCK ALARM
ADJUST MENU
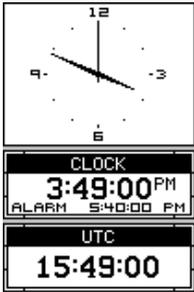
CLOCK ALARM
SET

the ENT key. The unit returns to the clock alarm menu. Highlight the "CLOCK ALM OFF ON" menu and press the right arrow key to turn it on. Press the EXIT key to erase the menus. The unit returns to the group with the alarm's time showing in the clock's window.

Group I
This group has estimated time enroute (ETE) at the top of the screen, a trip timer, estimated time of arrival (ETA), and the digital clock.

The trip timer measures the total time you have been travelling. It starts counting when you exceed a preset speed. The default is 5 miles per hour. You can adjust this time from zero to 200 m.p.h.. To do this, press the MENU key, then select "TRIP TIMER SETUP" menu. The screen at right appears. Highlight the "START GS" label, then press the left or right arrow keys until the desired speed appears. Press the EXIT key to erase this screen.

TRIP TIMER MENU

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Group J

There are three timers on this screen and an odometer (TRIP METER). The trip timer is described in group I. The trip meter measures the distance you've travelled since it was last reset. To reset the trip meter, press the MENU key, then select "TRIP METER RESET" and press the right arrow key. The unit returns to Group J with the trip meter reset to zero.

The up timer starts at zero and counts up. The up timer also has an alarm. The down timer starts from a user setting and counts down to zero.

MAIN MENU   UP TIMER MENU   UP TIMER SET
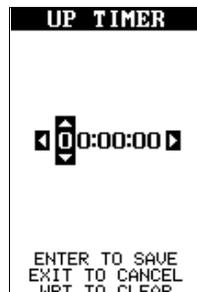
To start a timer, first press the MENU key, then highlight the desired timer setup menu. In this example, we're using the count up timer, so the UP TIMER SETUP was selected. Now press the right arrow key. A screen similar to the one above center appears. To start the timer, simply highlight the "UP TIMER" menu, then press the right arrow key. To reset the timer to zero, select the "UP TIMER RESET" menu. The up timer has an alarm that can be set to sound at a preset time. (For example, one hour from now, three hours, etc.) To set the alarm, highlight the "UP TIMER ALM SET" and press the right arrow key. The screen at the upper right appears.

Using the arrow keys, highlight the first number in the time that you want to set. (The time is in hours, minutes, and seconds) Now press the up or down arrow keys until the desired number shows. Continue until the time shown in the display is correct, then press the ENT key. The unit returns to the timer menu screen. To turn the alarm on, highlight the "UP ALARM" label. Press the right arrow key. Press the EXIT key to erase the menu. The time you set shows in the "UP TIMER" box . The timer continues

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counting until you stop it. When it reaches the alarm's time setting, a tone sounds. Press the EXIT key to shut the alarm off.

The countdown timer starts from a time that you enter and counts down to zero. (Note: When the countdown timer reaches zero, it begins counting *up* until you press the EXIT key. This tells you how long it's been since the alarm sounded.) Use the "DOWN TIMER SETUP" menu to adjust the countdown timer and reset it to zero.

Reprogram Boxes
The digital boxes on MAP 2 and 3 and both NAV screens can be reprogrammed, changing the informations shown by the boxes.

To customize a screen, first switch to the screen that you want to customize. Map-2 (shown at right) is used in this example. Next, press the MENU key, then select the "Reprogram Boxes" menu. The screen shown below left appears.
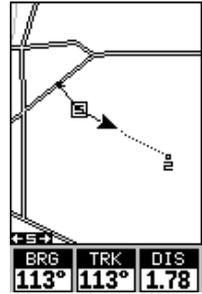
This is the MAP-2 edit screen. The "BRG" box near the left corner flashes, which means it's ready for change. If you don't want to change this box, simply press the left or right arrow key to move to the box that you do want to change. In this example, we will change the bearing (BRG) box to
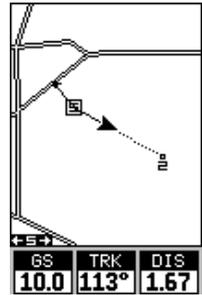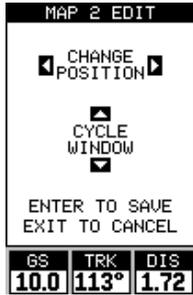
ground speed (GS). To do this, simply press the up or down arrow key while the box is flashing. The box changes each time the arrow key is pressed. When the desired box appears, then you can change another box or save your changes by pressing the ENT key. If you want to leave this screen without saving the changes, simply press the EXIT key. In this

example, we simply changed the BRG to GS, then pressed the ENT key. The screen on the far right on the previous page is the final version. Use this same method to change the NAV screens.

RESET GROUPS
To restore all boxes on the navigation and plotter screens to their factory settings, first press the MENU key, then highlight the "System Setup" label and press the right arrow key. Now highlight the "Reset Groups" label on this menu. Press the right arrow key. A message appears, asking if you really want to do this. Press the right arrow key to continue, or the left arrow key to exit without resetting the groups.

WAYPOINTS
This GPS receiver gives you the ability to create your own database of locations, called "waypoints'. You can save your present position, cursor position, or enter a coordinate and save it as a waypoint. For example, you may wish to store the location of your parked car as a waypoint before starting on a hike. When you want to return to the car, all you have to do is recall the waypoint and the unit will show distance and bearing from your present position to the car. This unit stores up to 750 waypoints.

Waypoint Menu
With few exceptions, in order to save, modify, or recall a waypoint, you'll use the waypoint menu, shown at right. The current waypoint number shows at the top of the screen. Its name appears beneath the "GO TO WPT" label. The waypoint's position, distance and bearing from your present position to the waypoint, and the date and time the waypoint was saved show at the bottom of the screen. It's icon shows just to the right of the distance and bearing. In short, all of the detail about the waypoint shows on this screen.

Saving Your Present Position as a Waypoint (Quick Save Method)
To save your present position, simply press the WPT key twice. Your current position is placed into the first available waypoint number on the list. A message appears on the display telling you the waypoint number it just used. This also momentarily places you in the waypoint menu. Anytime this menu is showing, simply press the WPT key once and the unit will store your present position on the waypoint list. In this case, waypoint number two was assigned when the position was saved.

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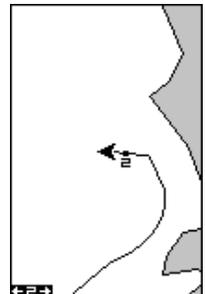
Saving The Cursor Position as a Waypoint
When the cursor is showing on the map and you press the WPT key twice, the cursor's position is placed into the first available waypoint number. In the example screen shown below, the cursor is placed at the desired location. Pressing the WPT twice causes waypoint number three to be placed at the cursor's crosshairs. (Waypoint 3 was the next available waypoint number.) A message appears on the display telling you the waypoint number it just used. Wait a few seconds and the menu will clear automatically. Press the EXIT key to erase the cursor.
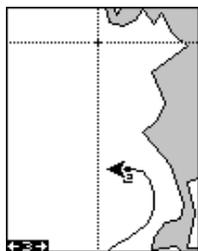
N 36°32.519'
W 95°38.957'
BRG-347° DIS-2.02

MOVE CURSOR TO
DESIRED LOCATION
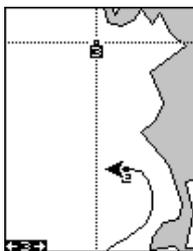
N 36°32.519'
W 95°38.957'
BRG-347° DIS-2.02

PRESS WPT KEY
TWICE

Saving Your Present Position as a Waypoint
(Select Number Method)
The method shown previously doesn't let you choose the waypoint number. You can pick the waypoint number, then save your present or cursor position. To save your present position, press the WPT key once. (If you're saving the cursor position, first move the cursor to the desired location, then press the WPT key.) A screen similar to the one at right appears.

Highlight the "WPT" label at the top of the screen. Press the right or left arrow keys until the desired waypoint number appears that you wish to save your present (or cursor) location under. Waypoint number 4 is used in this example. Now select "CREATE WPT". A screen similar to the one at right appears. Finally, highlight "CURRENT POS" and press the right arrow key. The unit returns to the waypoint screen with the position saved under the selected waypoint number. Note: you can save the position on any waypoint number, even if a position is already stored on the desired number.

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Saving a New Position

To save a position other than the cursor's or the present position as a waypoint, first select the waypoint number as described on the previous page. Next, select "CREATE WPT". The screen shown at the bottom of the previous page appears. Select "ENTER POS". The screen shown at right appears. Using the arrow keys, enter the latitude and longitude of the position that you want to save. (Note: latitude and longitude is the default, however if UTM or other position format is in use, this screen will let you enter the position in the format that's currently in use.)
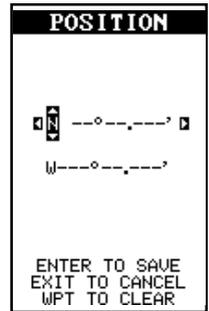
Waypoint Averaging

Although electronic position finding devices such as this one show the position in precise digital numbers, there is some ambiguity in the displayed position. With position pinning turned off, you can see this by watching the position displayed on the unit move while you're standing still. This is due to many factors; SA, atmospheric conditions, the number of satellites being tracked and their location relative to your position, and so on.

However, even with SA turned on, this GPS receiver can show surprisingly accurate position information. If you wish to increase the accuracy of a saved position, use the waypoint averaging method. This method requires the unit to remain untouched at the location that you want to save, preferably for at least one hour. Longer times will result in a better position. The unit averages all of the positions reported by its GPS receiver, resulting in typically higher position accuracy.

To use this feature, first press the WPT key and select a waypoint number, then select "CREATE WPT". The screen at the bottom of the previous page appears. Now select "AVERAGE POS". The screen shown at right appears. Your present position shows at the top of the screen. A box with a plotter graphically shows the movement of your average position. The number of positions or points taken appears beneath the plotter. The position is updated once per second. Now place the unit where it has an unobstructed view of the sky.

At the end of the position gathering time, press the ENT key to save the averaged position.
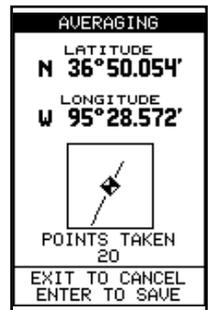
Project a Waypoint
You can save a waypoint even if you don't know it's position or location on the map. This unit lets you project the location of a waypoint from a known waypoint using only bearing and distance from the known waypoint. This is useful if you don't know the latitude/longitude of a location, but you do know the distance and bearing from a saved waypoint or your own position.

(Note: To project a waypoint from your present position, you must first save your present position as a waypoint.)

To use this feature, press the WPT key, then select a waypoint number that you want to save the projected waypoint under. Waypoint 5 is used in this example. Now select "CREATE WPT". Finally, select "PROJECT POS". The screen shown above appears.

The unit needs a location (reference waypoint) to project the new waypoint from. The default reference is waypoint number one. Highlight the "REFERENCE WPT" label on the Project WPT menu and press the right arrow key. The screen at right appears. Select a waypoint using either the waypoint number, or waypoint list. When you've chosen the waypoint, highlight the "SET REFERENCE" label and press the right arrow key. The unit returns to the Project WPT screen shown above. The starting waypoint you chose shows in the middle of this screen. Now set the distance from the starting waypoint to the projected waypoint by highlighting the "SET DIST" label and pressing the right arrow key. Use the arrow keys to set the distance, then press the ENT key when you're finished. The unit returns to the Project WPT screen. Now enter the bearing from the starting waypoint to the projected waypoint by selecting "SET BRG" from the Project WPT screen. Once you've entered the bearing, the unit returns to the Project WPT screen with the distance and bearing showing at the bottom of the screen, as shown at right. In this example, a distance of 2.5 miles and a bearing of 50° was used. Now press the ENT key. The unit saves the projected location under the waypoint number that you picked at the beginning.

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SELECTING A WAYPOINT

In order to edit or navigate to a waypoint, you must first select it. There are three ways to do this: by waypoint number, waypoint list, or search by name. All selection methods are on the main waypoint menu shown at right.

Waypoint Number

To select a waypoint by its number, simply highlight the "WPT" label at the top of the waypoint menu, then press the left or right arrow keys until the desired waypoint number appears.

Waypoint List

The waypoint number selection method forces you to scroll through all waypoint numbers, whether there's a location saved in them or not. The waypoint list is composed only of saved waypoints. To use the list, select "WPT LIST" from the waypoint menu. The screen shown at right appears. The names of all waypoints stored in memory show on this list. Simply highlight the desired waypoint and press the right arrow key to select it. The waypoint menu reappears.
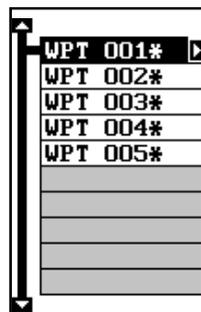
(Note: When created, a waypoint is given a default name designated by an asterisk (*). Default names are not shown on the map. The waypoint number is shown until it's renamed.)

EDITING A WAYPOINT

You can customize a waypoint by giving it a name or change it's position or icon. To do this, first press the WPT key. The waypoint screen appears. Follow the instructions below for each item.

Edit Position

Any latitude/longitude can be assigned to any waypoint by manually entering it using the keyboard. First select the waypoint number that you want to save a position under from the waypoint menu. Next, highlight "EDIT POSITION" and press the right arrow key. The screen shown at right appears. Using the left and right arrow keys, highlight each number in the position and change it using the up and down arrow keys. When you're ready to save this position and return to the waypoint screen, press the ENT key. Note: You can also use this method to change the position of an existing waypoint.

Edit Name

You can assign a name to each waypoint. The name can have up to eight characters. To do this, first select the waypoint that you wish to name, then choose "EDIT NAME" from the waypoint menu. A screen similar to the one at right appears.

Press the up or down arrow keys to select the first letter in the name. Press the right arrow key to highlight the next position in the name. Repeat this sequence until you've entered all of the letters in the waypoint name. Press the ENT key to accept this name, the WPT key to erase all characters in the name, or the EXIT key to leave this screen without saving any changes.
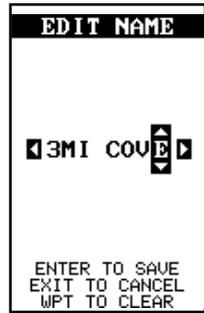
Edit Icon

To change the icon assigned to a waypoint, first select the waypoint, then choose "EDIT SYMBOL". The screen at right appears. Use the arrow keys to select the icon that you want to assign to the waypoint, then press the ENT key. The waypoint now has the new icon.

WAYPOINT NAVIGATION

The Map Guide Pro makes it easy to navigate to any waypoint. All you have to do is select the waypoint (see page 31), then highlight the "GO TO WPT" label on the waypoint screen and press the right arrow key. The unit immediately shows navigation information to the waypoint on all navigation, map, and windows screens.

In this example, waypoint number 4 was recalled. Switching to the MAP-2 screen (at right) shows the starting location "S", the recalled waypoint "4", the plot trail from the starting location to the present position, and the present position. The present position arrow also shows the direction of travel (track).
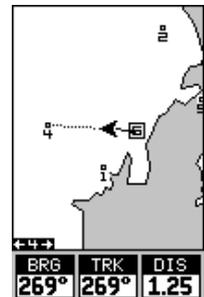
Navigating to a cursor location

This unit lets you navigate to a location without storing it in the waypoint database by using the map and cursor. To do this, first switch to a map. Now move the cursor to the location that you want to navigate to. Next, press the MENU key. A new, highlighted menu appears

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on the list: "Go To Cursor". Press the right arrow key. It now shows navigation data to the cursor location (shown as "D" on the map). See the screens below.
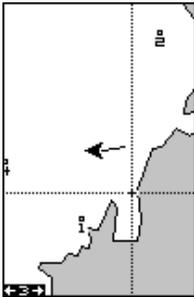
MOVE CURSOR TO
DESIRED LOCATION
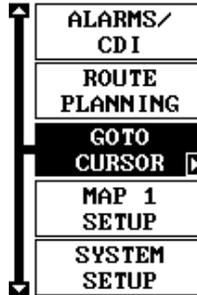
PRESS MENU KEY,
THEN PRESS RIGHT
ARROW KEY
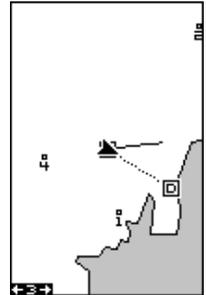
NAVIGATING TO
CURSOR
POSITION

Navigating to a Waypoint using the Map

The unique "birds-eye" view used by the map gives you an easy way to navigate to a waypoint. On the map screen shown at right, the arrow is your present position. The box with the "S" in it was your starting location when the waypoint was recalled. The dotted line is called a course line and is the shortest path from the starting location to the destination. The number "4" is waypoint number four, which is the recalled waypoint and the destination. The "D" on the map screen at the top of this page is the cursor destination, when the cursor position is used as a destination. If you follow the course line, you'll reach the destination, covering the shortest distance in the least time.
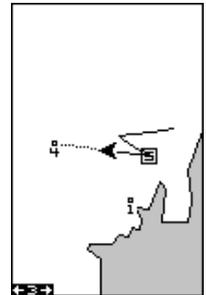
CAUTION!

This product does NOT take land features, restricted or prohibited areas, or any other feature into account when it projects the course line on the screen. Use caution when navigating to a location. Make certain there are no obstructions in your path.

OTHER WAYPOINT OPTIONS
Move a Waypoint

You can move all information from one waypoint number to another to help organize the waypoints. In this example, we'll move all of the information in waypoint number 1 to waypoint number 10. To do this, highlight the "MOVE WPT" on the waypoint screen and press the right arrow key.

The screen shown at right appears. The "From" label is highlighted at the top of the screen. Press the right arrow key until the waypoint number that you want to move appears. In this example, we selected waypoint number 1. Now press the down arrow key once to highlight the "To" label. Press the left or right arrow key until the number that you want to move the waypoint to appears. Again, in this example, we chose to move waypoint number 1 to waypoint number 10, so we pressed the right arrow key until "10" appeared. As you can see on the screen above, waypoint number 1 is showing in the "From" box. Now press the ENT key. The "From" box is now empty and the "To" box has waypoint number 10.
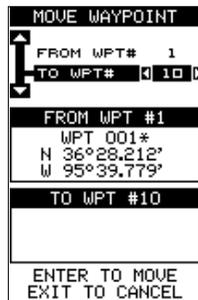
Note: The names in the "From" and "To" boxes are not the waypoint numbers - they are the waypoint names.

Press the EXIT key to erase this menu.

Delete a Waypoint
To erase all of the information in a waypoint, first press the WPT key, then select the waypoint you want to erase. Now highlight the "DELETE WPT" label and press the right arrow key. A message appears, asking if you really want to delete this waypoint. Press the right arrow key to delete it, the left to exit without deleting the waypoint.
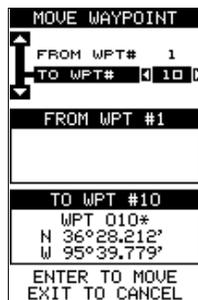
Delete All Waypoints
You can remove all of the waypoints from the unit's memory. To do this, press the MENU key, then highlight the System Setup menu and press the right arrow key. Now highlight the DEL ALL WPTS label. The unit removes all waypoints from memory. Note: This also removes all routes from memory.

Waypoint Options
You can customize the method used to show a waypoint on the map screens. To do this, first press the MENU key, then select "MAP SETUP", finally select "WAYPOINT OPTIONS". The screen shown at right appears. You can turn all of the waypoints, their symbols, names, or numbers on or off. Simply select the desired label, then press the appropriate arrow key. Press the EXIT key to erase this menu.
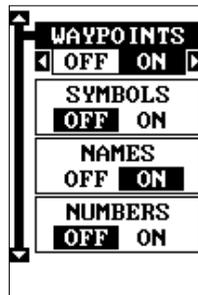
ROUTES

You can connect several user waypoints together to form a route. When you recall the route, the unit shows navigation information to the first waypoint in the route, then when you reach that waypoint, it switches to the next waypoint, and so on until you reach the last waypoint in the route.

Create a Route

To create a route, first press the MENU key, highlight the "ROUTE PLANNING" label, and press the right arrow key. The screen shown at right appears.
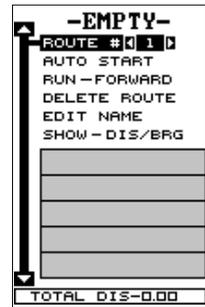
This unit can store up to 99 routes. Route number one shows on this page. If you wish to create a route using a different number, simply press the left or right arrow keys until the desired route number appears. In this example, however, we'll use route number one.

If you wish to name the route, highlight the "EDIT NAME" label and press the right arrow key. Use the arrow keys to name the route, (you can use up to eight characters in the name) then press the ENT key when you're finished.

The gray boxes in the lower half of the screen comprise the list of waypoints that form the route. To add waypoints to the route, highlight the first gray box in the middle of the screen and press the right arrow key. The screen shown at right appears. To add a waypoint to the route from the waypoint table, select the "ADD WPT" label. The screen shown at the top left on the next page appears.

Add From Waypoint List

This screen is virtually identical to the waypoint screen Select a waypoint either by using the waypoint number, waypoint name, or from the waypoint list. After selecting the waypoint, highlight the "ADD TO ROUTE" label and press the right arrow key. The unit returns to the route screen with the first waypoint at the top of the list. Highlight the next waypoint location beneath the first waypoint and press the right arrow key. Now repeat the previous steps to select the second waypoint for your route. After selecting the second waypoint, the unit returns to the waypoint list screen. The second waypoint shows beneath the first one, with bearing and distance from the first waypoint in the route to the second showing under the second waypoint's name.

SELECT FIRST
WAYPOINT AND ADD
TO ROUTE
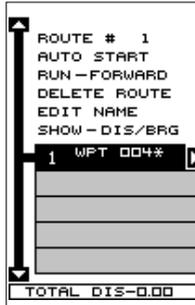
UNIT RETURNS TO
ROUTE PAGE
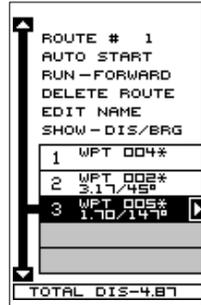
REPEAT UNTIL
ALL WAYPOINTS
ARE IN ROUTE

Add From Map

You can add waypoints from the map, even create new ones. To do this, select "ADD FROM MAP" from the menu as shown below left. A screen similar to the one below center appears. Using the arrow keys, move the cursor to the desired waypoint or location. Now press the ENT key to add it to the route. If it's an existing waypoint, it will be added to the route. If you mark a location with the cursor that isn't a waypoint, the unit will create a waypoint and add it to the route. To add another location or waypoint to the route, move the cursor to that location and press the ENT key. When you're finished, press the EXIT key. The screen below right appears.
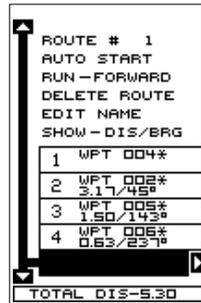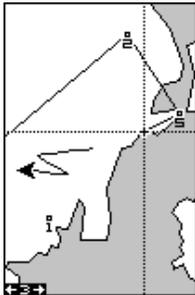
The total route distance shows at the bottom of the screen. Continue selecting waypoints until all of the waypoints in the route are on the list. Press the EXIT key to return to the Route menu. Your route is now saved in memory. Press the EXIT key to erase the menus.

Delete a Waypoint

To remove a waypoint from a route, first select the route, then select the waypoint that you want to delete and press the right arrow key. Highlight the "Delete" label on this menu and press the right arrow key. The unit

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returns to the route list with the waypoint removed from the list. (Note: This doesn't delete the waypoint from the database, it simply removes it from the route.)

Waypoint Statistics
By default, this unit shows the distance and bearing from each waypoint in the route to the next. It will also show estimated time en route (ETE), estimated time of arrival (ETA), or the waypoint names (NAMES). To view the different statistics, highlight the "SHOW-DIS/BRG" label, then press the left or right arrow key until the desired statistic appears.

Following a Route - Direct To Method
Before starting the route, you'll need to decide if you want to start at the first waypoint and travel forward to the last waypoint or start at the last waypoint in the route and travel backwards (reverse) to the first waypoint. The default is forward. You can also start at the closest waypoint to your position, then travel forward or reverse through the route using the "AUTO START" feature.
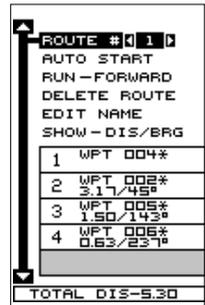
To follow a route, first select the route number that you wish to follow by highlighting the "Route #" label, and pressing the left or right arrow keys until the desired route number appears. In this example we're using route number one. To run the route from the last waypoint to the first, highlight the "RUN" label and press the right arrow key to change it from forward to reverse.

Now highlight the first waypoint in the route that you wish to start with and press the right arrow key. (The first waypoint in the route is used in this example.) The screen shown above right appears. Now select "DIRECT TO" and press the right arrow key.

The unit returns to the last used navigation, mapping, or windows screen. In this example, map screen 2 was in use. A box with the "S" inside represents your location when you started the route. A dotted line shows from your starting position to the waypoint. A dashed line extends from this waypoint to each of the other
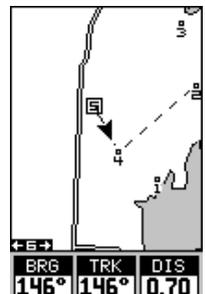
waypoints in the route. Follow these lines to get to each of the waypoints. When you enter the radius set by the arrival alarm, the unit automatically switches to the next waypoint on the list, showing navigation data to that waypoint, and so on until the last waypoint on the route list has been reached. (Note: The arrival alarm does not have to be turned on.) The unit continues to show navigation data to the last waypoint in the route until you end the navigation. (See "Cancel Navigation)

Following a Route - Auto Start Method
You don't have to choose the starting waypoint in a route. Selecting "AUTO START" on the route planning menu, starts navigation along the *leg* of the route that is closest to your present position. The screen shown below left shows the result of the auto start feature. When the route was started, the first leg of the route (from waypoint #4 to waypoint #2) was the closest to
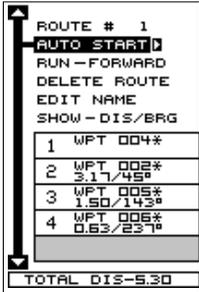
the present position. Therefore, the unit shows navigation information to waypoint number 2. The first leg of the route, from #4 to #2 is shown on the screen by a dotted line. Once you arrive at waypoint number 2, the unit switches to the next waypoint in the route, and so on. The rest of the route navigation is used normally.

Waypoint Information
To see details about the highlighted waypoint, select the waypoint from the list of waypoints on the route screen, then press the right arrow key. The screen at right appears. Now select "WPT INFO". The screen at the top of the next page appears.

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The selected waypoint number appears at the top of this screen. Information about the waypoint shows at the bottom of the screen. When you're finished with this screen, press the EXIT key to erase it.

Delete a Route

To erase a route, highlight the "ROUTE #" label on the route planning menu, then select the route you want to erase. Next, highlight the "DELETE ROUTE" label and press the right arrow key. A message appears, asking if you really want to erase the route. If you press the right arrow key, the route will be erased. If you select "Yes" (by pressing the right arrow key) the unit then asks if you want to erase the waypoints used in the route from memory also. Press the right arrow key again to erase them, or the left arrow key to leave the waypoints in memory. The unit returns to the routes menu. Press the EXIT key to erase the menu.

CANCEL NAVIGATION

This unit continues to navigate to a recalled waypoint, the last waypoint in a route, or the cursor position until you stop it.

To stop the navigation function, press the MENU key, then press the up or down arrow keys until the "Cancel Nav" label is highlighted. Press the right arrow key. The unit stops showing navigation information.
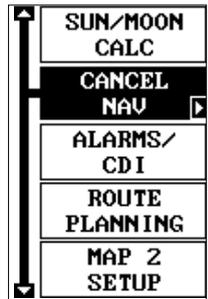
Navigation Notes

If you are navigating with this unit, either to a waypoint or in a route and shut it off, it will preserve the current waypoint number that it is navigating to. It also saves the current route (if it is in use) and the route's forward or reverse order. When you turn the unit on, it will show navigation data to the waypoint as soon as it locks onto the satellites as if it had never been turned off.

SYSTEM SETUP

Many features are listed under the "System Setup" label on the main menu. These commands affect the basic operation of the unit. To use them, press the MENU key, then "System Setup". The screen at right appears.

Sound

To turn the speaker off, highlight the "SOUND" label as shown below, then press the left arrow key. Note: This turns the speaker completely off. The unit will not sound a tone when a key is pressed, nor will any alarm sound. The alarm messages will still flash on the screen, however.

Contrast

To adjust the display's contrast, highlight the "Contrast" label. Press the right or left arrow keys until the screen's contrast is best for the lighting conditions.

Backlight

The display has lights that can be turned on for night use. To turn the lights on, simply press the PWR key.

To turn them off, press the PWR key again. A light bulb indicator on the satellite status screen shows when the lights are on.

The default light level is maximum. To reduce the level, select "BACK-LIGHT", then press the left arrow key until the lights are at the desired level. To increase the light level, press the right arrow key.

The lights automatically turn off after 30 seconds to preserve the battery power. It will do this even if the external power is applied to the unit. The time delay is adjustable from 5 to 240 seconds by selecting Light Dly from the System Setup menu . You can also turn the lights on continuously from this menu. Highlight this menu, then press the right arrow key to increase the time the lights are on, the left arrow key to decrease it.

Set Local Time

When this unit is first initialized, it may not show the correct time for your location due to daylight savings time, time zone variances, and so on. If the time shown on the clock displays is incorrect, select "SET LOCAL TIME" from the system setup menu and press the right arrow key. The screen shown at the top of the next page appears.
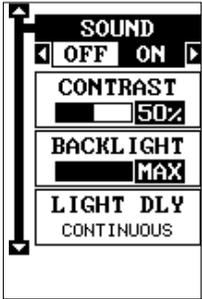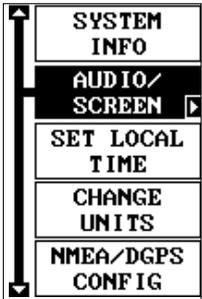
Use the left or right arrow keys to select the number in the current time that you want to change. Use the up or down arrow keys to change the number. Press the ENT key to save the change, the EXIT key to erase the menu without changing it.

Units of Measure
You can view data in three different formats: statute, nautical, and metric. The default is statute. The chart below shows the settings for each.

	Statute	**Nautical**	**Metric**
Distance	miles	nautical miles	kilometers
Speed	miles per hour	knots	kilometers per hour
Altitude	feet	feet	meters

The unit will also show bearing in degrees true or magnetic, and the clock in 12 hour (a.m./p.m.) or 24 hour formats. To change a unit of measure, first select "CHANGE UNITS" from the System Setup menu. Highlight the desired selection, then press the left or right arrow key. You can change any or all of the settings on this page. When you're finished, press the EXIT key.

NMEA / DGPS
This product transmits data through the power/data port in the back of the unit using NMEA 0183 format, version 1.5 or 2.0. The data is used by other electronic devices such as marine autopilots for position and steering information.

DGPS on the other hand, is a data input. DGPS is an acronym for Differential Global Positioning System. Currently, it relies on a system of ground-based transmitters that send correction signals to small DGPS receivers. DGPS gives you more accurate positions than is otherwise possible.

All wiring connections to this GPS receiver are made through the power

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cable. See the sample wiring diagrams on the next page for general wiring procedures. Read your other product's owner's manual for more wiring information.

Once the cables are wired, turn the unit on, press the menu key, and select "NMEA / DGPS CONFIG" from the System Setup menu. A screen similar to the one shown below appears.

NMEA Output
To turn the NMEA output on, highlight the "NMEA OUT" menu (shown at right), then press the right arrow key. If your other equipment works, then no setup will need to be performed. If your other equipment doesn't recognize the NMEA data being sent by the Map Guide Pro and the wiring is correct, then you may need to change the NMEA or the serial communication settings.
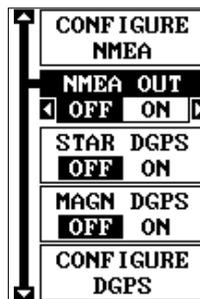
Configure NMEA Output
Highlight the "Configure NMEA" menu, then press the right arrow key. The screen shown below appears.

NMEA 0183 Version
There are two versions of the NMEA data, 1.5 and 2.0. If your other equipment requires 1.5, press the left arrow key to select it.
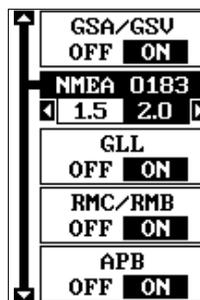
GLL, RMC/RMB, APB, GGA, GSA/GSV Sentences
Some equipment requires different sentence. The default setting for these sentences is on. In other words, it automatically sends these sentences when NMEA is turned on. To turn any of these off, move the black box to the desired menu and press the left arrow key. Press the EXIT key when everything on this screen is the way you want it.

DGPS
This unit will recognize Starlink® and Magnavox® automatic DGPS receivers. If you have either one of these receivers, simply highlight the "Star DGPS" or "Magn DGPS" on the NMEA / DGPS menu (shown at the top of this page) and press the right arrow key to turn it on. (Note: If you have a Magnavox DGPS receiver connected, the Map Guide Pro can't send NMEA data.) With the exception of serial communications, typically no other setup needs to be made with these receivers.

TO MAP GUIDE PRO

MAP GUIDE PRO
TRANSMITTING NMEA
DATA *TO* ANOTHER DEVICE

MAP GUIDE PRO
WIRES

WHITE WIRE
RED WIRE
TO +12V

BLACK WIRE

GROUND WIRES

OTHER DEVICE'S
WIRES

OTHER
DEVICE'S
RECEIVE
DATA WIRE

OTHER
DEVICE

12 VDC
BATTERY

− +
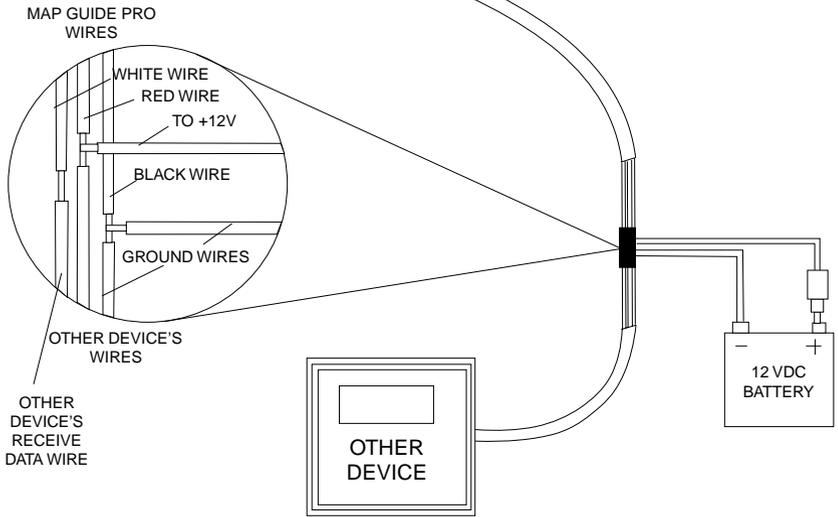
TO MAP GUIDE PRO

MAP GUIDE PRO
RECEIVING DATA *FROM*
A DGPS RECEIVER

MAP GUIDE PRO
WIRES

GREEN WIRE

WHITE WIRE
RED WIRE
TO +12V

BLACK WIRE

GROUND WIRES

DGPS
RECEIVER'S
TRANSMIT
DATA WIRE

DGPS
RECEIVER'S
RECEIVE
DATA WIRE
(IF NEEDED)

DGPS
RECEIVER

12 VDC
BATTERY

− +

45
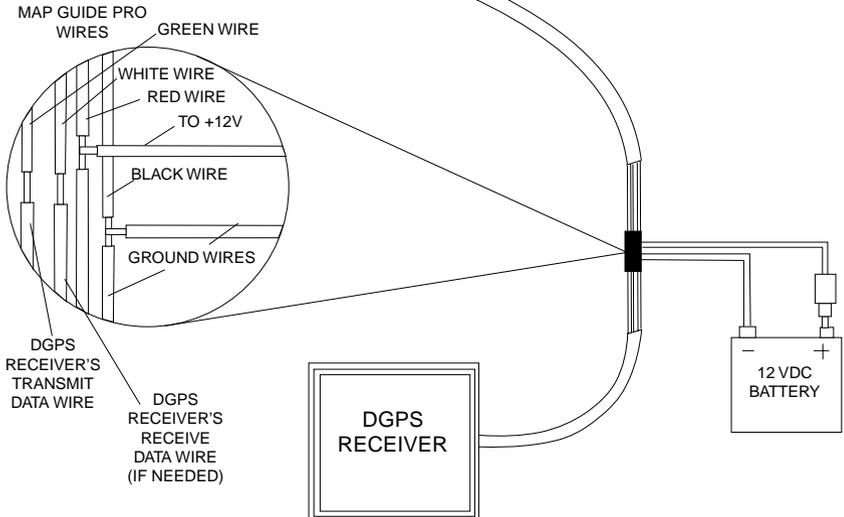
If you have any other Magnavox or Starlink compatible DGPS receiver connected to the Map Guide Pro, you may need to change the settings. To do this, move the black box to the "Configure DGPS" label and press the right arrow key. A screen similar to the one at right appears.
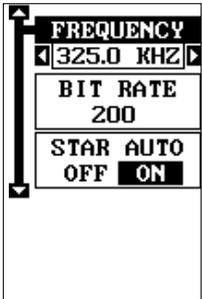
These menus select the beacon receiver's frequency and bit rate (in bits per second). To change one of these settings, simply highlight the menu item you wish to change, then press the right or left arrow key until the desired number appears.

The "STAR AUTO" menu works with the Starlink or compatible receivers that automatically determine the frequency and bit rate. If you have one of these receivers, leave this set to "ON".

Press the EXIT key when you're finished.

Serial Communication Setup
If you're connecting a computer or other serial device to this unit, (including DGPS receivers) you'll probably need to change the communications settings. To do this, select "COM PORT SETUP" on the System Setup menu. Press the right arrow key. The screen shown at right appears.
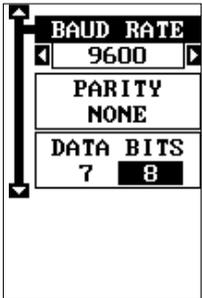
Check your computer or DGPS receiver's manual for the proper data settings. Highlight the menu item you need to change. Press the left or right arrow keys to change them. The serial port defaults are 4800 baud, no parity, and 8 data bits. Press the EXIT key to erase this menu.

Reset Options
To return the unit to the original factory settings, highlight the "Preset Options" menu on the System Setup screen. Now press the right arrow key. A message appears, asking if you want to restore the original options. Press the right arrow key if you do, the left arrow key to quit.

If you restore the unit to the factory settings, all options such as contrast, alarms, and other system choices are returned to their default values. However, no waypoints, routes, or icons are erased.

Reset Groups
To return all window groups and boxes on the navigation and mapping screens to their factory defaults, select Reset Groups on the System Setup menu. Finally, press the right arrow key. All window groups and digital boxes are reset to their factory settings.

System Info
The system information screen shows the release date and the software's version number. To view this screen, highlight the System Info label on the System Setup menu. Now press the right arrow key. Press the EXIT key when you're finished reading this screen.

GPS SETUP
Items found under the GPS Setup menu include initialization, (covered at the beginning of this manual), position format, power save, datums, and more. To use any of these features, first press the MENU key, highlight GPS Setup and press the right arrow key. The screen shown at right appears.
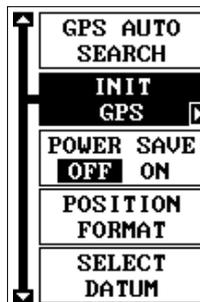
POWER SAVE
This GPS receiver has an important power save feature that significantly improves battery life. However, this feature does affect the receiver's performance. If you are using it under heavy cover, such as trees or around tall buildings, the receiver can lose its lock on the satellites easier when the power save feature is enabled. The power save feature changes the position update rate. We recommend you test the power save feature in known surroundings and determine its capabilities before venturing into unknown territory.

To turn the power save feature on, select "PWR SAVE" from the GPS SETUP menu and press the right arrow key to turn it on. Press the EXIT key to erase the menu.

The letters "PS" for "Power Save" show on the satellite status screen whenever the power save mode is on. You can also verify the power save mode status by viewing the GPS Setup menu.

To turn the power save mode off, simply return to the GPS Setup menu as described above, highlight the "PWR SAVE" label, and press the left arrow key.

Position Format
The Map Guide Pro can show the position in degrees, minutes, and thousandths of a minute (36° 28.700') or degrees, minutes, seconds, and tenths of a second (36° 28' 40.9"). It can also show position in UTM (Universal Transverse Mercator) projection, British, Irish, Swedish, Swiss, Finnish, New Zealand, and Military Grid.

UTM's are marked on USGS topographic charts. This system divides the Earth into 60 zones, each 6 degrees wide in longitude.

German, Taiwan, British, Irish, Swedish, Swiss, New Zealand, and Finnish grid systems are the national coordinate system used only in their respective countries. In order to use these grid systems, you must be in the respective country. This unit will pick the matching datum for you when you select the grid. See the Datums section for more information.

The military grid reference system (MGRS) uses two grid lettering schemes, which are referred to as standard and alternate MGRS on the Map Guide Pro. Your position and datum in use determines which one to use. If you use the standard, and your position is off significantly, then try using the alternate.

Note: When the position format is changed, it affects the way all positions are shown on all screens. This includes waypoints.

To change the format, highlight the "Position Format" label on the "GPS Setup" menu, then press the right arrow key. A screen similar to the one at right appears. Press the up or down arrow keys to select the desired format. Press the EXIT key to erase the position format menu.
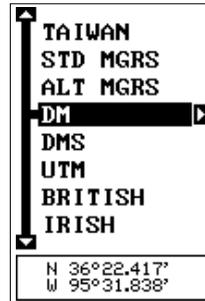
DATUM
Maps and charts are based on a survey of the area that's covered by the map or chart. These surveys are called "Datums". Maps that are created using different datums will show the same latitude/longitude in slightly different locations.

All datums are named. The GPS system is based on the WGS-84 datum, which covers the entire world. Other datums may also cover the entire world, or just a small portion. By default, your position shows using the WGS-84 datum. However, it can show your position using one of 191 different datums.

To change the datum, first press the MENU key, then highlight the "GPS Setup" label and press the right arrow key. Now highlight the "Select Datum" label. Finally, press the right arrow key again. A screen similar to the one at right appears.

The WGS-84 label is highlighted. To change it, simply press the up or down arrow keys to highlight the desired datum, then press the ENT key. This selects the datum and erases the select datum menu. To erase the menu without changing the datum, simply press the EXIT key.

A list of the datums used by the Map Guide Pro is in the back of this manual.

PCF (Position Correction Factor)
Another method used to make your display match a chart or map is called "PCF" or Position Correction Factor. This unit gives you the capability to move or offset the position shown on the display to match one on the chart. The unit will add this offset to all position and navigation displays at all times.

Remember, the position error on any radio navigation system is very dynamic and the PCF offset should never be used in an attempt to cancel the error.

In general terms, PCF should only be used if your map indicates what the possible error is. **PCF should always be reset to zero when you're finished with the chart.**

For example, suppose you are stopped at a location that is accurately marked on a chart. Your unit shows a longitude position that is .244 minutes east of the one on the chart and .047 minutes north latitude. Using the PCF feature, you can make the Map Guide Pro match the chart you're using. If you move, the unit will continuously add the change to all position, navigation, and mapping displays. This makes it more closely match the datum used by the chart. For this reason, you should be careful when entering the PCF offset. It's saved in memory and doesn't change when the unit is turned off. However, resetting the unit does erase the PCF offset.

To change the PCF offset, first press the MENU key, then highlight the "GPS Setup" label and press the right arrow key. Now highlight the "Set

PCF Offset" label. Finally, press the right arrow key again.
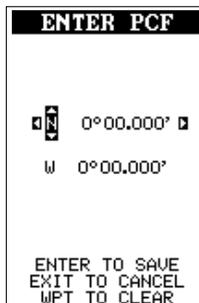
A screen similar to the one at right appears.

Now enter the correction for your location. Remember, this is the difference between the location shown on the present position display and the position shown on the chart. In this example, we entered 0 degrees, 0.047 minutes north latitude and 0 degrees, 0.244 minutes east longitude. That is the difference between the present position shown by the Map Guide Pro and the one on our chart.

ENTER PCF

◙N   0°00.000' ▶

W   0°00.000'

ENTER TO SAVE
EXIT TO CANCEL
WPT TO CLEAR

After you've entered the latitude/longitude correction, press the ENT key to accept it. The Map Guide Pro erases the PCF entry screen and returns to the navigation or mapping screens with the correction factor applied.

ENTER PCF

N   0°00.047'

◙W   0°00.244' ▶

ENTER TO SAVE
EXIT TO CANCEL
WPT TO CLEAR
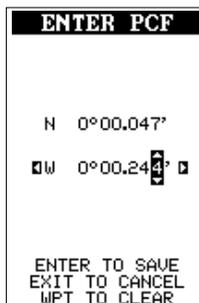
POSITION PINNING

When using a GPS receiver at extremely low speeds, it can have trouble determining your course over ground, or direction you're travelling. This is due in large part to SA, or selective availability. SA is small inaccuracies purposefully put into the GPS satellite's signal by the government. This cause wide variations in the track display and other navigation displays when using the unit at slow speeds.

If you're using this receiver without DGPS and stop, the position pinning feature locks the present position indicator on the plotter until you've moved a short distance or exceed a very slow speed. This prevents the "wandering" plot trail seen when you're stopped with position pinning turned off. This also affects the navigational displays.

The easiest way to see the effects of S/A is to stand still with the GPS receiver turned on and watch your plot trail with position pinning turned off. You'll see the present position change, speed increase and decrease, and a random plot trail on the plotter's screen.

If you wish to turn the position pinning feature off, press the MENU key, then highlight the "GPS Setup" label and press the right arrow key. Now highlight the "Pinning" label. Finally, press the left arrow key.

ALARMS

The Map Guide Pro has several alarms. You can set an arrival alarm to flash a warning message and sound a tone when you cross a preset distance from a waypoint. For example, if you have the arrival alarm set to .1 mile, then the alarm will flash a message when you come within .1 mile of the recalled waypoint. The course deviation indicator alarm (CDI) can warns when your track drifts too far to the right or left of the course line to the waypoint. For example, if the alarm is set to .1 mile, then the alarm flashes a message if you drift .1 of a mile or more to the right or left of the line to the waypoint. The anchor alarm is triggered when you drift outside of a preset radius. Again, using the .1 mile as an example, if you're an-chored and your boat moves more than .1 of a mile, the alarm will flash a message and sound a tone.

To use any of these alarms, first press the MENU key, then select the "ALARMS/CDI" menu. A screen similar to the one shown at right appears. Press the up or down arrow key to move the black box to the desired alarm, then press the right arrow key to turn it on.

To adjust an alarm's distance, move the black box to the alarm's "DIS" menu item, then press the right or left arrow keys to increase or decrease the alarm's dis-tance.
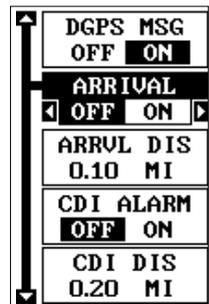
When you're finished, press the EXIT key to erase this menu.

Important Alarm Notes:

Anchor Alarm - Since civilian users don't receive the accuracy given to military users, the anchor alarm may be triggered even when you're sit-ting still. This typically happens when using small (less than .05 mile) anchor alarm ranges. If you have a DGPS beacon receiver connected to the Map Guide Pro, smaller ranges may be usable.

Arrival Alarm - If you set the arrival alarm's distance to a small number, and you run a route (see the routes section), the Map Guide Pro may not show navigation data to the next waypoint, once you arrive at the first one, since you may not be able to come close enough to the first waypoint to trip the arrival alarm.

MESSAGES

The DGPS message selections are found on the Alarms/CDI menu shown above. Pressing the EXIT key erases these messages.

The DGPS message appears whenever the unit begins or stops using DGPS data to help determine your position.

The default setting for these messages is "on". To turn the message off, select the "Setup Alarms" menu from the main menu, then highlight "DGPS MSG" and press the left arrow key.

SUNRISE/SET MOONRISE/SET CALCULATOR

This unit has a sunrise/sunset and moonrise/moonset calculator that shows this information anywhere or anytime in the world. To use it, press the MENU key, then highlight "SUN/MOON CALC" and press the right arrow key. Highlight either the sun or moon calculator and press the right arrow key. The screen shown at right appears if you chose the sunrise calculator. (Both calculators work identically. The sunrise/sunset calculator is used for this example.) The sunrise and sunset for today's date appear in the center of the screen. Today's date shows at the top of the screen. If you want to know the sunrise/sunset for a different date, press the ENT key, then enter the new date with the arrow keys. The unit returns to the sunrise/sunset calculator screen with the sunrise and sunset times shown for the date you entered.

```
┌─────────────────────┐
│   SUNRISE/SUNSET    │
│                     │
│     02/11/98        │
│   PRESS ENTER       │
│  TO CHANGE DATE     │
│     SUNRISE         │
│       7:15 AM       │
│     SUNSET          │
│       6:00 PM       │
│        AT           │
│     PRESENT         │
│     POSITION        │
└─────────────────────┘
```

The sunrise and sunset show for your present position. If you move the plotter's cursor to a different position before using this calculator, it will show the sunrise/sunset for the cursor's location.

The moonrise/moonset calculator works identically to the sunrise/sunset calculator. It looks like the screen at right. A moon symbol shows near the bottom of the screen, showing the approximate phase of the moon. The arrow next to the symbol shows if it is moving towards a full moon (up) or a new moon (down).

Press the EXIT key to erase this screen.

```
┌─────────────────────┐
│  MOONRISE/MOONSET   │
│                     │
│     02/11/98        │
│   PRESS ENTER       │
│  TO CHANGE DATE     │
│     MOONRISE        │
│ 100%↑   6:30 PM     │
│  ○  MOONSET         │
│       7:18 AM       │
│        AT           │
│     PRESENT         │
│     POSITION        │
└─────────────────────┘
```

SIMULATOR
A simulator is built into this unit that has several options. You can use nearly all of the unit's features - even save and recall waypoints. This is useful for trip planning.

To use the simulator, press the MENU key, then press the up or down arrow keys until the "SIMULATOR SETUP" menu is surrounded by the black box. Now press the right arrow key. The screen shown at right appears.
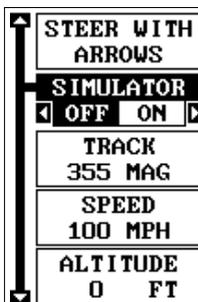
If you simply press the right arrow key, turning the simulator on, the Map Guide Pro will start from your present position and follow a track of 355° at 100 miles per hour.

To change either the track or speed, highlight the one you want to change, then press the right or left arrow key. When the numbers are correct, press the EXIT key.

Starting Position
Normally, the starting position for the simulator is your present position. If you want to change the starting position, highlight the "SET START WPT" label on the Simulator Setup menu, then press the right arrow key. The screen shown at right appears.
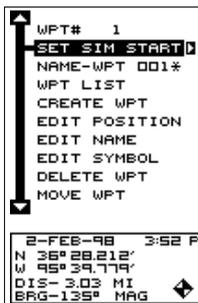
You can select any waypoint as the simulator's starting point. Select the starting point by pressing the right arrow key on the "WPT#" label until the desired starting waypoint number appears. Now highlight the "SET SIM START" label and press the right arrow key. The unit returns to the Simulator Setup menu using the specified waypoint as the starting waypoint.

Use Arrow Keys to Steer
This option lets you change both the course and speed on the screen as the simulator is running. To do this, highlight the "STEER WITH ARROWS" label on the Simulator Setup screen, then press the right arrow key. The screen shown at right appears. Use the up and down arrow keys to increase or decrease the speed. Use the right and left arrow keys to change the track. When you're finished changing the track and speed, press the EXIT key to erase the menus.

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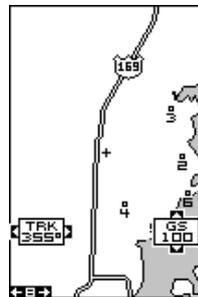
DEFINITION OF TERMS/ABBREVIATIONS

Due to space considerations, the digital displays use abbreviations for some names. They are as follows:

ALT .... Altitude - Your height above sea level.

BRG .... Bearing - The direction from your present position to a waypoint.

CDI .... Course Deviation Indicator - Shows your distance to the side of the desired course line.

CLOCK .... Your local time.

TRK .... Track - The direction you're travelling.

DIS .... Distance - Distance remaining between your present position and a waypoint.

DNT/UPT ...... Countdown timer (DNT) and Count up timer (UPT)

ETA .... Estimated Time of Arrival

ETE .... Estimated Time En route

ICON .... A symbol you can place on the map, representing a landmark.

POSITION .... Your present position.

GS .... Ground Speed - Your actual speed.

UTC .... Coordinated Universal Time - Time at the prime meridian at Greenwich, England. Formerly known as GMT.

VOLTS .... Electrical system voltage.

VMG .... Velocity Made Good - Your ground speed towards a recalled waypoint, airport, etc.

DATUMS

WGS 84 .... WGS 1984
DEFAULT   Default

ADINDAN .... Adindan
MEAN   Mean for Ethiopia, Sudan

ADINDAN .... Adindan
BURKINA   Burkina Faso
FASO

ADINDAN .... Adindan
CAMEROON   Cameroon

ADINDAN .... Adindan
ETHIOPIA   Ethiopia

ADINDAN .... Adindan
MALI   Mali

ADINDAN .... Adindan
SENEGAL   Senegal

ADINDAN .... Adindan
SUDAN   Sudan

AFGOOYE .... Afgooye
SOMALIA   Somalia

AIN EL ABD .... Ain el Abd 1970
1970   Bahrain
BAHRAIN

AIN EL ABD .... Ain el Abd 1970
1970 SAUDI   Saudi Arabia
ARABIA

ANNA 1 ASTRO .... Anna 1 Astro 1965
1965 COCOS   Cocos Islands
ISLANDS

ANTIGUA .... Antigua Island Astro 1943
ISLAND   Antigua (Leeward Islands)
ASTRO 1943

ARC 1950 .... Arc 1950
MEAN   Mean for Botswana, Lesotho,
            Malawi, Swaziland, Zaire, Zambia,
            Zimbabwe

ARC 1950 .... Arc 1950 - Botswana
BOTSWANA

ARC 1950 .... Arc 1950 - Burundi
BURUNDI

ARC 1950 .... Arc 1950 - Lesotho
LESOTHO

ARC 1950 .... Arc 1950 - Malawi
MALAWI

ARC 1950 .... Arc 1950 - Swaziland
SWAZILAND

ARC 1950 .... Arc 1950 - Zaire
ZAIRE

ARC 1950 .... Arc 1950 - Zambia
ZAMBIA

ARC 1950 .... Arc 1950 - Zimbabwe
ZIMBABWE

ARC 1960 .... Arc 1960 - Mean for Kenya,
MEAN   Tanzania

ASCENSION .... Ascension Island 1958 -
ISLAND   Ascension Island
1958

ASTRO BEACON .. Astro Beacon E 1945 - Iwo Jima
E 1945
IWO JIMA

ASTRO DOS 714 .. Astro DOS 71/4 - St Helena Island
ST HELENA
ISLAND

ASTRO TERN .... Astro Tern Island (FRIG) 1961 -
ISLAND   Tern Island
1961

ASTRONOMICAL .. Astronomical Station 1952 -
STATION '52   Marcus Island
MARCUS ISLE

AUSTRALIAN .... Australian Geodetic 1966 -
GEODETIC   Australia & Tasmania
1966

AUSTRALIAN .... Australian Geodetic 1984 -
GEODETIC   Australia & Tasmania
1984

AYABELLE .... Ayabelle Lightlhouse - Djibouti
LIGHTHOUSE
DJIBOUTI

BELLEVUE .... Bellevue (IGN) - Efate &
(IGN) EFATE   Erromango Islands
ERRAOMANGO

BERMUDA .... Bermuda 1957 - Bermuda
1957

BISSAU .... Bissau - Guinea-Bissau
GUINEA

BOGOTA .... Bogota Observatory - Colombia
OBSERVATORY
COLOMBIA

BUKIT RIMPAH ...... Bukit Rimpah - Indonesia (Bangka
INDONESIA   & Belitung Islands)

CAMP AREA .... Camp Area Astro - Antarctica
ASTRO   (McMurdo Camp Area)
ANTARCTICA

CAMPO .... Campo Inchauspe - Argentina
INCHAUSPE
ARGENTINA

CANTON ASTRO .. Canton Astro 1966 - Phoenix
'66 PHOENIX   Islands
ISLANDS

CAPE .... Cape - South Africa
SOUTH
AFRICA

CAPE .... Cape Canaveral - Bahamas,
CANAVERAL   Florida
BAHAMAS FL

CARTHAGE	Carthage - Tunisia	
TUNISIA		
CH-1903	Switzerland	
CHATHAM	Chatham Island Astro 1971	
ISLAND ASTRO	New Zealand (Chatham Island)	
NEW ZEALAND		
CHUA ASTRO	Chua Astro	
PARAGUAY	Paraguay	
CORREGO	Corrego Alegre	
ALEGRE	Brazil	
BRAZIL		
DABOLA	Dabola	
GUINEA	Guinea	
DJAKARTA	Djakarta (Batavia)	
(BATAVIA)	Indonesia (Sumatra)	
INDONESIA		
DOS 1968	DOS 1968	
NEW GEORGIA	New Georgia Islands	
ISLANDS	(Gizo Island)	
EASTER	Easter Island 1967	
ISLAND	Easter Island	
1967		
EUROPEAN	European 1950	
1950 MEAN	Mean for Austria, Belgium,	
WESTERN	Denmark, Finland, France,	
	West Germany, Gibralter, Greece,	
	Italy, Luxembourg, Netherlands,	
	Norway, Portugal, Spain, Sweden,	
	Switzerland	
EUROPEAN	European 1950	
1950 MEAN	Mean for Austria, Denmark,	
CENTRAL	France, West Germany,	
	Netherlands, Switzerland	
EUROPEAN	European 1950	
1950 MEAN	Mean for Iraq, Israel, Jordan,	
MIDDLE EAST	Lebanon, Kuwait,	
	Saudi Arabia, Syria	
EUROPEAN	European 1950	
1950	Cyprus	
CYPRUS		
EUROPEAN	European 1950	
1950	Egypt	
EGYPT		
EUROPEAN	European 1950	
1950 GREAT	England, Channel Islands, Ireland,	
BRITAIN	Scotland, Shetland Islands	
EUROPEAN '50	European 1950	
FINLAND	Finland, Norway	
NORWAY		
EUROPEAN	European 1950	
1950	Greece	
GREECE		
EUROPEAN	European 1950	
1950	Iran	
IRAN		

EUROPEAN	European 1950	
1950 ITALY	Italy (Sardinia)	
(SARDINIA)		
EUROPEAN	European 1950	
1950 ITALY	(Sicily)	
(SICILY)		
EUROPEAN	European 1950	
1950	Malta	
MALTA		
EUROPEAN	European 1950	
1950 SPAIN	Portugal, Spain	
PORTUGAL		
EUROPEAN	European 1979	
1979	Mean for Austria, Finland,	
MEAN	Netherlands, Norway, Spain,	
	Sweden, Switzerland	
FORT THOMAS	Fort Thomas, 1955	
1955 NEVIS	Nevis, St. Kitts	
ST. KITTS	(Leeward Islands)	
GAN 1970	Gan 1970	
REPUBLIC OF	Republic of Maldives	
MALDIVES		
GEODETIC	Geodeic Datum 1949	
DATUM 1949	New Zealand	
NEW ZEALAND		
GRACIOSA	Graciosa Base SW 1948	
BASE SW	Azores (Faial, Graciosa, Pico,	
1948 AZORES	Sao Jorge, Terceira)	
GUAM	Guam 1963	
1963	Guam	
GUNUNG	Gunung Segara	
SEGARA	Indonesia (Kalimantan)	
INDONESIA		
GUX 1 ASTRO	GUX 1 Astro	
GUADALCANAL	Guadalcanal Island	
ISLAND		
HERAT NORTH	Herat North	
AFGHANISTAN	Afghanistan	
HJORSEY	Hjorsey 1955	
1955	Iceland	
ICELAND		
HONG KONG	Hong Kong 1963	
1963	Hong Kong	
HU-TZU-SHAN	Hu-Tzu-Shan	
TAIWAN	Taiwan	
INDIAN	Indian	
BANGLADESH	Bangladesh	
INDIAN	Indian	
INDIA NEPAL	India, Nepal	
INDIAN 1954	Indian - 1954	
THAILAND	Thailand, Vietnam	
VIETNAM		
INDIAN 1975	Indian - 1975	
THAILAND	Thailand	

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IRELAND ...............Ireland 1965          NAHRWAN .............Nahrwan
1965              Ireland               OMAN              Oman (Masirah Island)

ISTS 061 ................ISTS 061 Astro 1968 NAHRWAN .............Nahrwan
ASTRO 1968       South Georgia Islands SAUDI ARABIA      Saudi Arabia
S GEORGIA

ISTS 073 ................ISTS 073 Astro 1969 NAHRWAN .............Nahrwan
ASTRO 1969       Diego Garcia          UNITED ARAB       United Arab Emirates
DIEGO GARCIA                           EMIRATES


JOHNSTON ...........Johnston Island 1961    NAPARIMA BWI .....Naparima BWI
ISLAND           Johnston Island       TRINIDAD AND      Trinidad & Tobago
1961                                    TOBAGO

KANDAWALA .........Kandawala                N AMERICA ...........North American 1927
SRI LANKA        Sri Lanka             1927 MEAN         Mean for Antigua, Barbados, Barbuda,
                                       CARRIBEAN         Caicos Islands, Cuba, Dominican
KERGUELEN .........Kerguelen Island 1949                  Republic, Grand Cayman, Jamaica,
ISLAND           Kerguelen Island                        Turks Islands
1949
                                       N AMERICA ...........North American 1927
KERTAU 1948 ........Kertau 1948             1927 MEAN         Mean for Belize, Costa Rica,
W MALAYSIA       West Malaysia & Singapore CENTRAL AMER   El Salvador, Guatmala, Honduras,
SINGAPORE                                                Nicaragua

KUSAIE ASTRO ....Kusaie Astro 1951          N AMERICA ...........North American 1927
CAROLINE 1951    Caroline Islands      1927 MEAN         Mean for Canada
ISLANDS                                CANADA

L C 5 ASTRO ........L.C. 5 Astro 1961       N AMERICA ...........North American 1927
1961 CAYMAN      Cayman Brac Island    1927 MEAN         Mean for CONUS
BRAC ISLAND                            CONUS             (Continental United States)

LEIGON .................Leigon                   N AMERICA ...........North American 1927
GHANA            Ghana                 1927 MEAN         Mean for CONUS (East of Mississippi
                                       CONUS EAST        River) including Louisiana, Missouri,
LIBERIA .................Liberia 1964                     Minnesota
1964             Liberia
                                       N AMERICA ...........North American 1927
LUZON ...................Luzon                   1927 MEAN         Mean for CONUS
PHILIPPINES      Philipines            CONUS WEST        (West of Mississippi River)
                 (Excluding Mindanao)
                                       N AMERICA ...........North American 1927
LUZON ...................Luzon                   1927 ALASKA       Alaska
PHILIPPINES      Philipines (Mindanao)
MINDANAO                               N AMERICA ...........North American 1927
                                       1927 BAHAMAS      Bahamas
MAHE ISLAND ......Mahe 1971                (NO SAN SALV)     (Except San Salvador Island)
1971             Mahe Island
                                       N AMERICA ...........North American 1927
MASSAWA ............Massawa                 1927 BAHAMAS      Bahamas (San Salvador Island)
ETHIOPIA         Ethiopia (Eritrea)
(ERITREA)                              N AMERICAN ........North American 1927
                                       1927 CANADA       Canada (Alberta, British Columbia)
MERCHICH ...........Merchich                 (WEST)
MOROCCO          Morocco
                                       N AMERICAN ........North American 1927
MIDWAY ASTRO ...Midway Astro 1961           1927 CANADA       Canada (Manitoba, Ontario)
1961             Midway Islands        (CENTRAL)

MINNA ..................Minna                    N AMERICAN ........North American 1927
CAMEROON         Cameroon              1927 CANADA       Canada (New Brunswick,
                                       EAST              Newfoundland, Nova Scotia, Quebec)
MINNA ..................Minna
NIGERIA          Nigeria               N AMERICAN ........North American 1927
                                       1927 CANADA       Canada (Northwest Territories,
MONTSERRAT ......Montserrat Island Astro 1958 NORTH       Saskatchewan)
ISLAND           Montserrat
ASTRO 1958       (Leeward Islands)     N AMERICAN ........North American 1927
                                       1927 CANADA       Canada (Yukon)
M'PORALOKO .......M'Poraloko                 YUKON
GABON            Gabon
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N AMERICAN .... North American 1927 1927 CANAL ZONE	Canal Zone	PITCAIRN .... Pitcairn astro 1967 ASTRO 1967	Pitcairn Island

N AMERICAN .... North American 1927
1927 CANAL   Canal Zone
ZONE

N AMERICAN .... North American 1927
1927 CUBA   Cuba

N AMERICAN .... North American 1927
1927   Greenland (Hayes Peninsula)
GREENLAND

N AMERICAN .... North American 1927
1927 MEXICO   Mexico

N AMERICAN .... North American 1983
1983 ALASKA   Alaska, Canada, CONUS
CANADA CONUS

N AMERICAN .... North American 1983
1983 CENTRAL   Central America, Mexico
AM MEXICO

OBSERVATORIA ... Observaorio Metereo 1939
METEREO   Azores (Corvo & Flores Islands)
1939 AZORES

OLD EGYPTIAN .... Old Egyptian 1907
1907 EGYPT   Egypt

OLD HAWAIIAN ..... Old Hawaiian
MEAN   Mean for Hawaii, Kauai,
                   Maui, Oahu

OLD HAWAIIAN ..... Old Hawaiian
HAWAII   Hawaii

OLD HAWAIIAN ..... Old Hawaiian
KAUAI   Kauai

OLD HAWAIIAN ..... Old Hawaiian
MAUI   Maui

OLD HAWAIIAN ..... Old Hawaiian
OAHU   Oahu

OMAN .... Oman
                   Oman

ORD SURVEY .... Ordinance Survey
G BRITAIN   Great Britain 1936 - Mean for
1936 MEAN   England, Isle of Man, Scotland,
                   Shetland Islands, Wales

ORD SURVEY .... Ordinance Survey
G BRITAIN   Great Britian 1936 - England
1936 ENGLAND

ORD SURVEY G ... Ordinance Survey
BRITAIN 1936   Great Britian 1936 - England,
ENGLND WALES   Isle of Man, Wales

ORD SURVEY G ... Ordinance Survey
BRITAIN 1936   Great Britian 1936 - Scotland,
SCOTLAND   Shetland Islands

ORD SURVEY .... Ordinance Survey
G BRITAIN   Great Britian 1936 - Wales
1936 WALES

PICO DE .... Pico de las Nieves
LAS NIEVES   Canary Islands
CANARY ISLES

PITCAIRN .... Pitcairn astro 1967
ASTRO   Pitcairn Island
1967

POINT 58 .... Point 58
BURKINA   Mean for Burkina Faso & Niger
FASO NIGER

POINTE NOIRE ..... Pointe Noire 1948
1948 CONGO   Congo

PORTO SANTO ..... Porto Santo 1936
1936 MADEIRA   Porto Santo, Madeira Islands
ISLANDS

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Mean for Bolivia, Chile, Colombia,
1956 MEAN   Ecuador, Guyana, Peru, Venezuela

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Bolivia
1956 BOLIVIA

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Chile (Northern, Near 19°S)
1956 N CHILE

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Chile (Southern, Near 43°S)
1956 S CHILE

PROV S AMER ...... Provisional S. American 1956
1956   Colombia
COLOMBIA

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Ecuador
1956 ECUADOR

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Guyana
1956 GUYANA

PROVISIONAL .... Provisional S. American 1956
S AMERICA   Peru
1956 PERU

PROVI S AMER ..... Provisional S. American 1956
1956   Venezuela
VENEZUELA

PROVISIONAL .... Provisional S. American 1956
S CHILEAN   Chile (South, Near 53°S) (Hito XVIII)
1963 S CHLIE

PUERTO RICO ...... Puerto Rico
VIRGIN   Puerto Rico, Virgin Islands
ISLANDS

QATAR .... Qatar National
NATIONAL   Qatar

QORNOQ .... Qornoq
GREENLAND   Greenland (South)
(SOUTH)

REUNION .... Reunion
MASCARENE   Mascarene Islands
ISLANDS

ROME 1940 .... Rome 1940
ITALY   Italy (Sardinia)
(SARDINIA)

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RT 90 ....................Sweden                          SOUTH ASIA ........South Asia

SANTO (DOS) .......Santo (DOS)                            SINGAPORE .........Singapore
'65 ESPIRITO       1965 Espirito Santo Island
SANTO ISLAND                                              TANANARIVE ........Tananarive Observatory 1925
                                                         OBSERVATORY       Madagascar
SAO BRAZ .............Sao Braz                            1925
AZORES             Azores (Sao Miguel,                    MADAGASCAR
                   Santa Maria Islands)
                                                         TIMBALAI ..............Timbalai 1948
SAPPER HILL ........Sapper Hill 1943                      1948 BRUNEI       Brunei, East Malaysia
1943 EAST          East Falkland Island                   E MALAYSIA        (Sabah, Sarawak)
FALKLND ISLE
                                                         TOKYO ...................Tokyo
SCHWARZECK .....Schwarzeck                                MEAN              Mean for Japan, Korea, Okinawa
NAMIBIA            Nambia
                                                         TOKYO ...................Tokyo
SELVAGEM           Selvagem Grande                        JAPAN             Japan
GRANDE             Salvage Islands
SALVAGE ISLE                                             TOKYO ...................Tokyo
                                                         KOREA             Korea
SOVIET .................SGS 85
GEODETIC           Soviet Geodetic System 1985           TOKYO ...................Tokyo
SYSTEM 1985
                                                         OKINAWA .............Okinawa
S AMERICAN ........South American 1969
1969 MEAN          Mean for Argentina, Bolivia,          TRISTAN DA ..........Tristan Astro 1968
                   Brazil, Chile, Colombia, Ecuador,     CUNHA             Tristan da Cunha
                   Guyana, Paraguay, Peru,               ASTRO 1968
                   Trinidad & Tobago, Venezuela
                                                         VITI LEVU ..............Viti Levu 1916
S AMERICAN ........South American 1969                    1916 FIJI         Fiji (Viti Levu Island)
1969               Argentina
ARGENTINA                                                WAKE ....................Wake

S AMERICAN ........South American 1969                    ENIWETOK '60 ......Eniwetok 1960
1969 BOLIVIA       Bolivia
                                                         MARSHALL ISL ....Marshall Islands
S AMERICAN ........South American 1969
1969 BRAZIL        Brazil                                 WAKE ISLAND ......Wake Island Astro 1952
                                                         ASTRO 1952        Wake Atoll
S AMERICAN ........South American 1969
1969 CHILE         Chile                                  WGS 1972 .............WGS 1972
                                                         GLOBAL            Global Definition
S AMERICAN ........South American 1969                    DEFINITION
1969               Colombia
COLOMBIA                                                 YACARE .................Yacare
                                                         URUGUAY           Uruguay
S AMERICAN ........South American 1969
1969               Ecuador                                ZANDERIJ ............Zanderij
ECUADOR                                                   SURINAME          Suriname

S AMERICAN ........South American 1969
1969 ECUADOR       Ecuador (Baltra, Galapagos)
GALAPAGOS

S AMERICAN ........South American 1969
1969 GUYANA        Guyana

S AMERICAN ........South American 1969
1969               Paraguay
PARAGUAY

S AMERICAN ........South American 1969
1969 PERU          Peru

S AMERICAN ........South American 1969
1969 TOBAGO        Trinidad & Tobago
AND TRINIDAD

S AMERICAN ........South American 1969
1969               Venezuela
VENEZUELA
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Eagle's UPS Return Service - U.S.A. Only

Eagle Electronics and United Parcel Service (UPS) are proud to offer all of our customers free shipping for all units sent to us for repair or service. If you have to send this unit to the factory, and you are in the continental United States, use the enclosed UPS shipping label for easy, free shipping to our factory customer service department. There are six easy steps:

1. Call Eagle at the toll-free number on the back of this manual for a Return Authorization (RA) number and instructions about what accessories to return. **Do not return a product to the factory without a Return Authorization (RA) Number!**

2. Pack your unit and any accessories in the original shipping container, if possible. **Be sure to include proof of purchase for warranty verification!**

3. Write a brief note detailing the problem you're having with the unit. Please include your name, address, and daytime telephone number.

4. Please include payment for non-warranty repairs. Check, money order, Visa, or MasterCard may be used.

5. Fill in your name, address, zip code, date, and RA number in the blanks provided on the UPS form included with your unit.

6. Attach the label to the shipping box, tear off the tab for your receipt and give the package to any UPS driver or take the package to any UPS Customer Center. You will not be charged for this shipment.

That's it! Your unit will be shipped to Eagle's customer service department at no charge to you. Units under warranty will be returned to you at no charge.

NOTE!

Eagle will pay UPS surface shipping charges both to and from the factory for this unit in the event it needs repair. Your unit is insured against loss or shipping damage when you use the enclosed UPS label.

This UPS shipping offer is good only in the continental United States (excludes Alaska and Hawaii).

KEEP THIS LABEL!
YOU WILL NEED IT IF YOU EVER NEED TO RETURN YOUR UNIT TO THE FACTORY FOR REPAIR.

Accessory Ordering Information

To order accessories such as power cables, please contact:

1) Your local marine dealer. Most quality dealers that handle marine electronic equipment should be able to assist you with these items. Consult your local telephone directory for listings.

2) LEI Extras, Inc. P.O. Box 129 Catoosa, OK 74015-0129
or call
800-324-0045
(USA orders only.)

Eagle Electronics may find it necessary to change or end our shipping policies, regulations, and special offers at any time. We reserve the right to do so without notice.

EAGLE ELECTRONICS
FULL ONE-YEAR WARRANTY

"We", "our", or "us" refers to EAGLE ELECTRONICS, a division of LEI, the manufacturer of this product. "You" or "your" refers to the first person who purchases this product as a consumer item for personal, family, or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for one year (1) from the date of original purchase by you. WE MAKE NO OTHER EXPRESS WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT. Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any non-conformity with the product's written specifications, occurred within one year from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within one year from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. THIS REPAIR, REPLACEMENT, OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CON-FORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULT-ING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIR-CUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCI-DENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us, (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product, (3) when any serial number has been effaced, altered, or removed, or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

This warranty does not apply to any database or its contents supplied initially with this product. For warranty information on the databases and their contents, please refer to the "Databases Limited Warranty" included with this product.

EAGLE ELECTRONICS   **PO BOX 669**   **CATOOSA, OK 74015**

EAGLE DATABASES LICENSE AGREEMENT

THIS IS A LEGAL AGREEMENT BETWEEN THE END-USER WHO FIRST PURCHASES THIS PRODUCT AS A CONSUMER ITEM FOR PERSONAL, FAMILY, OR HOUSEHOLD USE ("YOU") AND EAGLE ELECTRONICS, A DIVISION OF LEI, THE MANUFACTURER OF THIS PRODUCT. ("WE", "OUR", OR "US"). USING THE PRODUCT ACCOM-PANIED BY THIS LICENSE AGREEMENT CONSTITUTES ACCEP-TANCE OF THESE TERMS AND CONDITIONS. IF YOU DO NOT AC-CEPT ALL TERMS AND CONDITIONS, PROMPTLY RETURN THE PRODUCT WITHIN 30 DAYS OF PURCHASE. PLEASE RETURN US-ING THE ENCLOSED UPS SHIPPING LABEL AND INCLUDE: PROOF OF PURCHASE, NAME, ADDRESS, AND PHONE NUMBER. YOUR PURCHASE PRICE AND ANY APPLICABLE TAXES WILL BE RE-FUNDED. PLEASE ALLOW 4-6 WEEKS TO PROCESS YOUR REFUND.

1. This License Agreement applies to the one or more databases that your product may contain. We refer to these singly as a "Database" and together as the "Databases." Your product may thus include the "WBS Database" which contains worldwide background surface map-ping data, the "SmartMap Database" which contains inland mapping data, or other Databases.

2. The Databases that your product may contain are licensed, not sold. We grant to you the nonexclusive, nonassignable right to use these Databases for supplemental navigation reference purposes, but only as long as you comply with the terms and conditions of this License Agreement. We reserve the right to terminate this license if you violate any aspect of this License Agreement. You are responsible for using official government charts and prudent navigation for safe travel.

3. The Databases housed in your product are protected by the copyright notices appearing on the product or its screen(s). You may NOT modify, adapt, translate, reverse engineer, decompile, disassemble, rent, lease, or resell any Database, and you may NOT create derivative works based upon any Database or its contents.. Any unauthorized repro-duction, use, or transfer of a Database may be a crime and may sub-ject you to damages and attorney fees.

4. This License Agreement will terminate immediately without prior no-tice from us if you fail to comply with or violate any of the provisions of this Agreement. Upon termination, you will promptly return all prod-ucts containing one or more Databases to us.

5. Prices and programs are subject to change without notice.

6. This License Agreement shall be governed by the laws of the State of Oklahoma and comprises the complete and exclusive understanding between you and us concerning the above subject matter.

DATABASES LIMITED WARRANTY

"We", "our", or "us" refers to Eagle Electronics, a division of LEI, the manufacturer of this product. "You" or "your" refers to the first person who purchases the product as a consumer item for personal, family, or household use. The Databases Limited Warranty applies to the one or more databases that your product may contain. We refer to each of these as a "Database" or together as the "Databases." Your product may thus include the "WBS Database" which contains worldwide background surface mapping data, the "SmartMap Database" which contains inland mapping data, or other Databases.

We warrant to you that we have accurately compiled, processed, and reproduced the portions of the source material on which the Databases are based. However, we are under no obligation to provide updates to the Databases, and the data contained in the Databases may be incomplete when compared to the source material. WE MAKE NO EXPRESS OR IMPLIED WARRANTY OF ANY KIND ABOUT THE ACCURACY OF THE SOURCE MATERIAL ITSELF, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

If there is a defect in any Database, your exclusive remedy shall be, at our option, either a refund of the price you paid for the product containing the defective Database or a replacement of such product. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us, (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product, (3) when any serial number has been effaced, altered, or removed, or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Your remedies under this warranty will be available so long as you can show in a reasonable manner that the defect occurred within one (1) year from the date of your original purchase, and we must receive your warranty claim no later than 30 days after such 1-year period expires. Your claim must be substantiated by a dated sales receipt or sales slip.

How to Obtain Service
(Canadian Customers Only)

We back your investment in quality products with quick, expert service and genuine Eagle replacement parts. If you need service or repairs, contact the Eagle Factory Customer Service Department at the toll-free number listed below. A technician may be able to solve the problem and save you the inconvenience of returning your unit. You will be asked for your unit's serial number.

800-324-1354

Canada Only. Monday through Friday 8:00 A.M. - 8:00 P.M. Central Time.

When sending a product for repair, please do the following:
1. Always use the original shipping container and filler material the product was packed in when shipping your product.

2   Always insure the parcel against damage or loss during shipment. Eagle does not assume responsibility for goods lost or damaged in transit.

3. For proper testing, repair, and service, send a brief note with the product describing the problem. Be sure to include your name, return shipping address, and a daytime telephone number.

How to Obtain Service
(International Customers Only - Except Canada)

If you need service or repairs, contact the dealer in the country you purchased your unit.

WARRANTY REPAIR WILL BE HONORED ONLY IN THE COUNTRY UNIT WAS PURCHASED.

Please follow the shipping instructions shown below on this page if you have to mail your unit to the dealer. For proper testing, repair, and service, send a brief note with the product describing the problem. Be sure to include your name, return shipping address, and a daytime telephone number.

Accessory Ordering Information - All Countries

To order accessories such as power cables or transducers, please contact:
1. Your local dealer. Most quality dealers that handle GPS navigation equipment should be able to assist you with these items. Consult your local telephone directory for listings.

2. Canadian customers only can write:
    Lowrance/Eagle Canada, 919 Matheson Blvd., E. Mississauga, Ontario L4W2R7
    or fax 416-629-3118

How to Obtain Service - U.S.A. Only

We back your investment in quality products with quick, expert service and genuine Eagle® replacement parts. If you're in the United States and you have questions, please contact the Factory Customer Service Department using our toll-free number listed below. You must send the unit to the factory for warranty service or repair. Please call the factory before sending the unit. You will be asked for your unit's serial number. Use the following toll-free number:

800-324-1354

U.S.A.only. Monday through Friday 8:00 A.M. - 8:00 P.M. Central time, except holidays.

Your unit is covered by a full one-year warranty. (See page 62 inside this manual for complete warranty details.) If your unit fails and the failure is not covered by the original warranty, Eagle has a flat-rate repair policy that covers your unit and accessories packed with the unit at the factory. There is a 180-day warranty on all non-warranty repairs from the factory, which is similar to the original warranty, but is for 180 days rather than one year. For further details, please call us at the above number.

Eagle also gives you free UPS shipping from anywhere in the continental United States both to and from the factory for all warranty repairs. You can also use the enclosed UPS shipping label for non-warranty shipments. See page 60 for more information. Remember, non-warranty repairs are subject to Eagle's published flat-rate charges and 180-day warranty.