



GlobalMap 2000TM

**INSTALLATION AND
OPERATION INSTRUCTIONS**

L[®] LOWRANCE

Setting The Course In Marine Electronics

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WARNING!

USE THIS UNIT ONLY AS AN AID TO NAVIGATION. A CAREFUL NAVIGATOR NEVER RELIES ON ONLY ONE METHOD TO OBTAIN POSITION 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.

Lowrance 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.

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INTRODUCTION

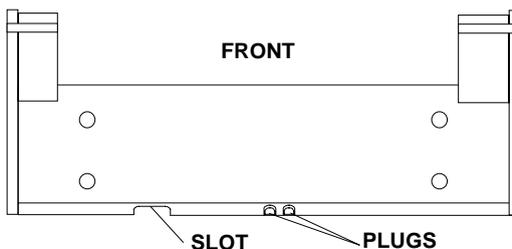
The GlobalMap 2000 is a high quality, wide screen mapping unit with performance that is second to none in its class. Using menu features and “soft-key” operation, it’s easy to use and sets new standards in mapping versatility and performance. The built-in reference map (background map) includes almost the whole world. Over 70% of the map’s detail is in the 48 contiguous states, Hawaii, and southern Canada. This unit also has the ability to read highly detailed maps of inland areas available on Lowrance IMS SmartMap™ cartridges or C-MAP™ mapping cartridges which cover most coastal areas around the world. (Both cartridges require the optional Lowrance Maplink™ cartridge reader.)

Position information can come from any Loran-C or GPS receiver via the industry-standard NMEA interface or directly from a Lowrance GPS module. DGPS capability is also included.

Installing a SAM (Sonar Access Module) and Lowrance transducer, the GlobalMap 2000 turns into a dual purpose unit, including a full-featured sonar with chart displays and digital bottom depth indicators. The sonar can be used by itself or in the “split-screen” mode with both sonar and mapping information shown side-by-side.

MOUNTING - Bracket Mount

Install it in any convenient location, provided there is clearance behind the unit when it is tilted for the best viewing angle. Holes in the bracket base allow wood screw or through-bolt mounting. You may need to place a piece of plywood on the back of thin fiberglass panels to secure the mounting hardware. Make certain there is enough room behind the unit to attach the power and interface cables.

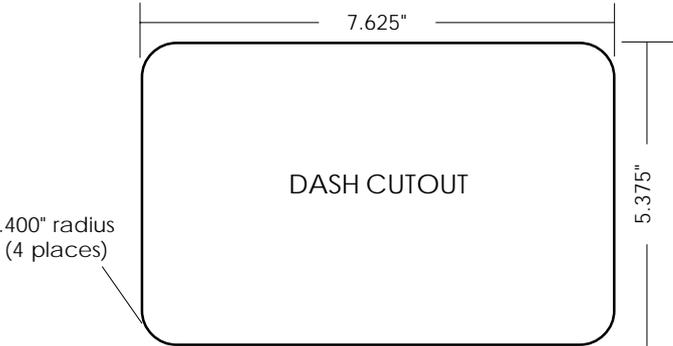


The smallest hole that will pass the power plug is one inch. After the hole is drilled, pass the other cables up through the hole first, then pass the power cable down through it.

After the cables have been routed, fill the hole with a good marine sealing compound. Offset the bracket to cover the hole. Route the cables through the slot in the back of the bracket. There are two "knockout" plugs in the rear of the bracket that can be removed to route cables, if necessary.

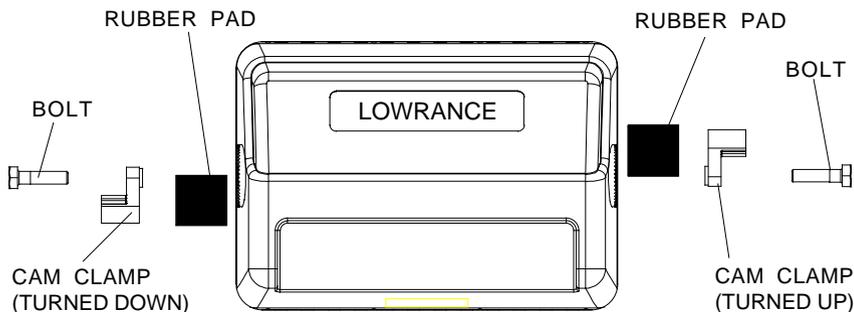
MOUNTING - In-Dash Mount

The mapping unit can be installed in the dash with the supplied hardware if the dash is 1/2" thick or less. Measure the dash thickness in the area you need to mount the unit, since dash thickness can vary. If it's thicker than 1/2", you'll need the FM-2 in-dash mounting bracket accessory. Make certain there is clearance behind the dash for the unit and there is enough room to tighten the bolts on both sides.



Once you've determined the location for the unit, cut the hole according to the drawing shown above. Measure carefully before cutting! After cutting the dash, slide the supplied gasket around the unit and place the unit in the hole.

Supplied with this unit are rubber pads, bolts, washers, and cam clamps to attach it to the dash. Peel the adhesive backing off the rubber pads and place one on each side of the unit in the location where the cam clamp will touch the back side of the dash. Using the hardware supplied with the unit, attach the unit to the dash. Looking at the back of the unit, make certain that the cam clamp on the left side of the unit is pointing down and the cam



clamp on the right side of the unit is pointing up before you start tightening the bolts.

POWER CONNECTIONS

This product works from a twelve-volt battery system. For the best results, attach the power cable directly to the battery. You can attach the power cable to an accessory or power buss, however you may have problems with electrical interference. Therefore, it's safer to go ahead and attach the power cable directly to the battery. If the cable is too short, splice 18 gauge wire onto it. A silver label identifies the power supply portion of the cable. It has four wires; red, black, green, and white. Red is the positive lead, black is negative or ground. Make certain to attach the in-line fuse holder to the red lead as close to the power source as possible. For example, if you have to extend the power cable to the battery or power buss, attach one end of the fuse holder directly to the battery or power buss. This will protect both the unit and the power cable in the event of a short. It requires a 3-amp fuse.

IMPORTANT!

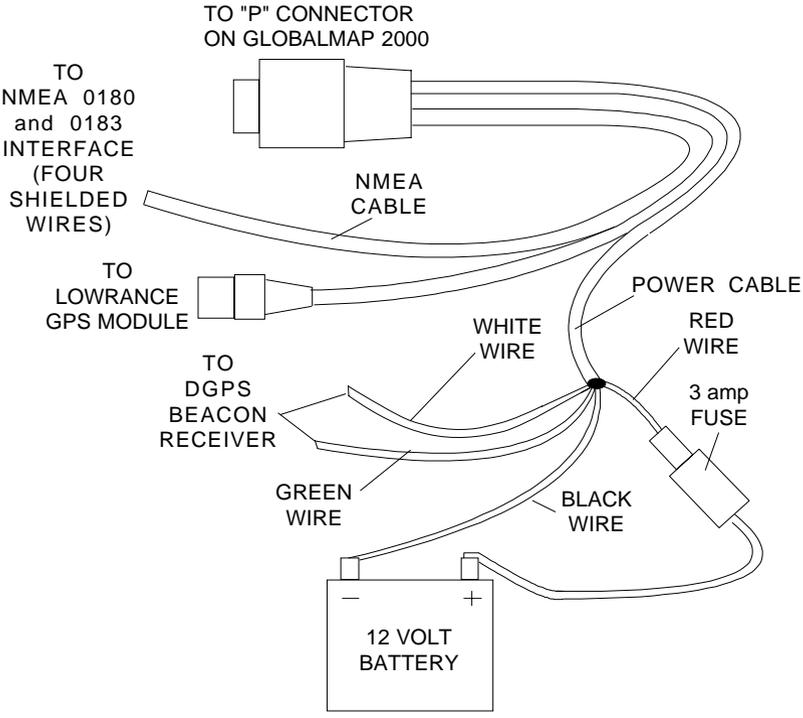
Do not use this product without a 3-amp fuse wired into the power cable!
Failure to use a 3-amp fuse will void your warranty.

DATA INPUT AND OUTPUT CONNECTIONS

This mapping unit requires navigation data to show position information. This can come from either a Lowrance GPS module, Lowrance GPS receiver, or another manufacturer's navigation receiver that can send the data in NMEA 0183 version 1.5 or 2.0 format. If you use the Lowrance GPS module, the NMEA input is not used. If you use any other navigation receiver for position information, then the NMEA input will have to be used. It can also accept sonar information from any SAM sonar access module, which also doesn't require the NMEA input.

The wiring connections for the NMEA 0183 version 1.5 are different than the ones used for the NMEA 0183 version 2.0. If you are using version 1.5, then use the shielded green and red wires on the mapping unit's NMEA cable. If you are using version 2.0, then you'll be using all four shielded wires on the NMEA cable.

If you're using a Lowrance GPS module, simply plug its cable directly into the in-line connector on the mapping unit's cable. This sends navigation data directly to the mapping unit without using any NMEA input. You can, if desired, use either NMEA output to drive another device while using the Lowrance GPS module as an input. This mapping unit also has the provision for a DGPS beacon receiver for use with the Lowrance GPS module.



GlobalMap 2000 POWER CONNECTIONS

Lowrance Accessory Wiring Diagrams

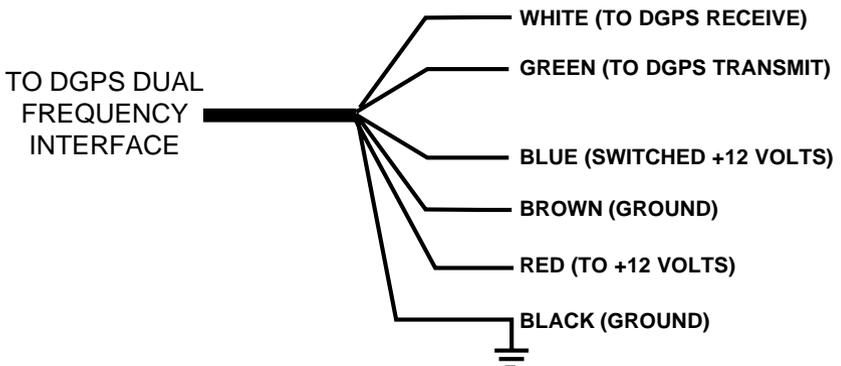
Since there are many different combinations of accessories that are used with the GlobalMap 2000, the drawings on the next four pages can help with the installation. (Note: The black connector on the GlobalMap 2000 is covered by a black plastic cap. Carefully pry this cap off to gain access to the connector.)

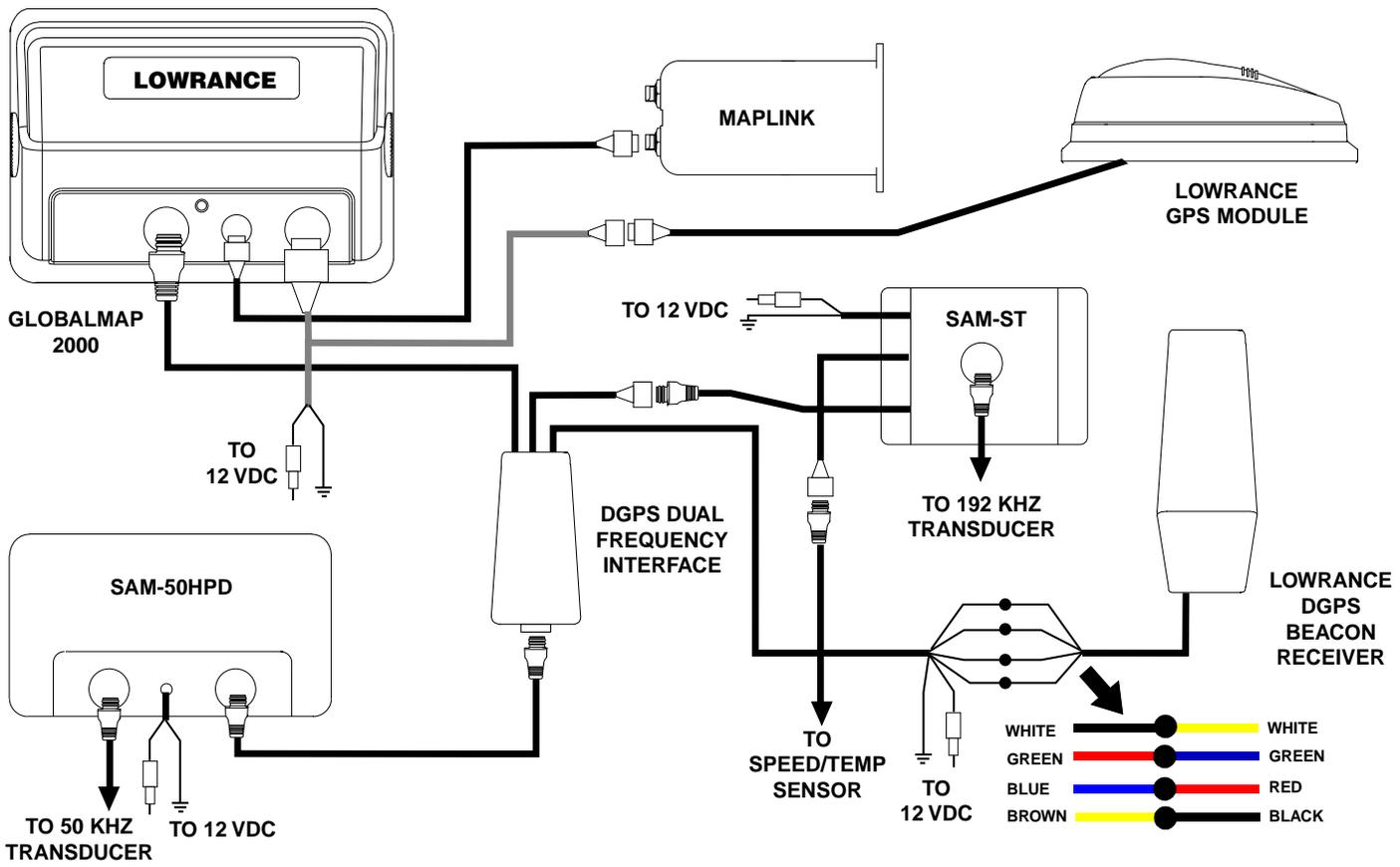
The diagram on page 7 shows the GlobalMap 2000 connected to a Lowrance GPS receiver and DGPS receiver, and both 192 kHz and 50 kHz (SAM) sonar modules. In order to use both a DGPS receiver and a SAM module, (or two SAM modules) you must use the optional DGPS Dual Frequency Interface. When this adapter is used, power to all Lowrance accessories is switched through the GlobalMap 2000, so accessory switches aren't necessary. Any other manufacturer's accessory will need to be connected directly to 12-volt power, through its own fuse.

Note: Do not connect the power wires from any beacon receiver other than a Lowrance DGPS receiver to the DGPS Dual Frequency Interface! All receivers tested by Lowrance draw more current than the Lowrance receiver, which will exceed the interface's current capability. You can connect any manufacturer's beacon receiver to the data wires (white and green) without problem. Also, a SAM-50HPD cannot be connected directly to a GlobalMap 2000.

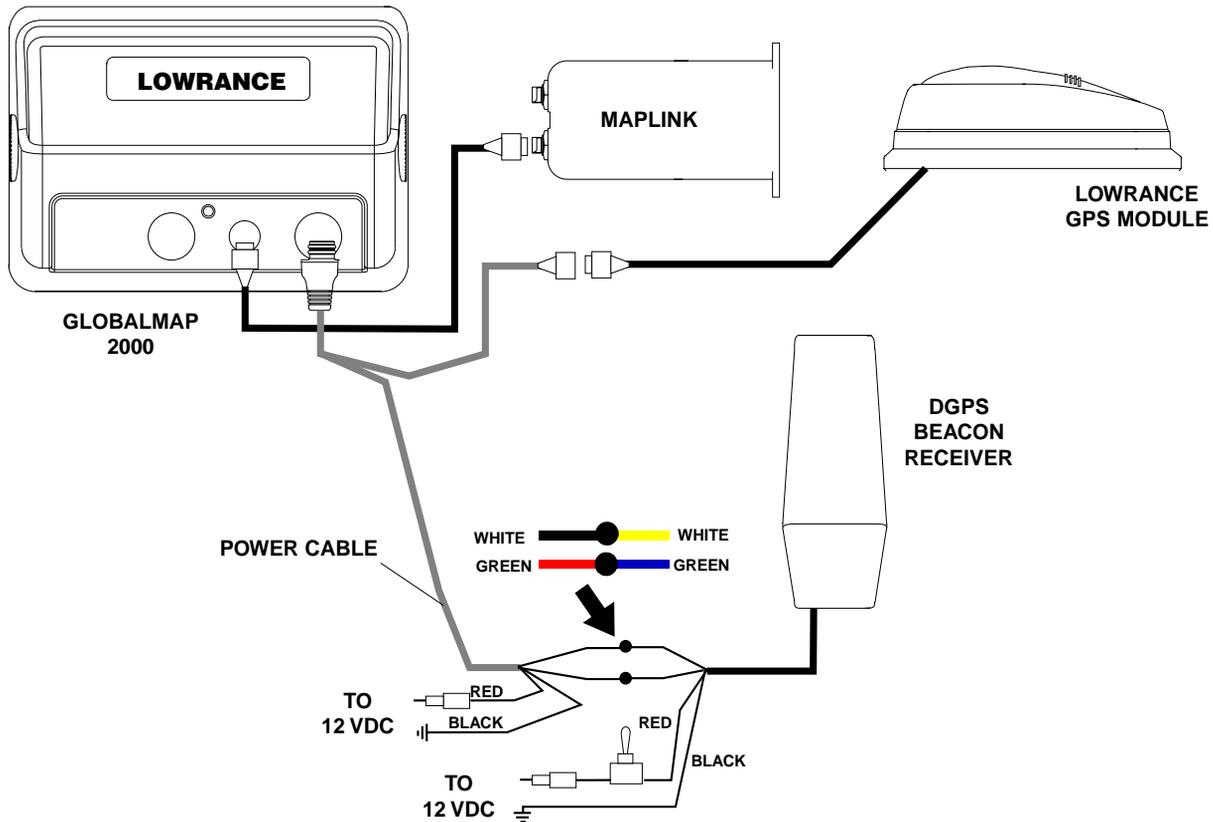
Page 8 shows a GlobalMap 2000 with a Lowrance GPS module, DGPS receiver, and a MapLink. The diagram on page 9 shows a SAM-ST, MapLink, and GPS module.

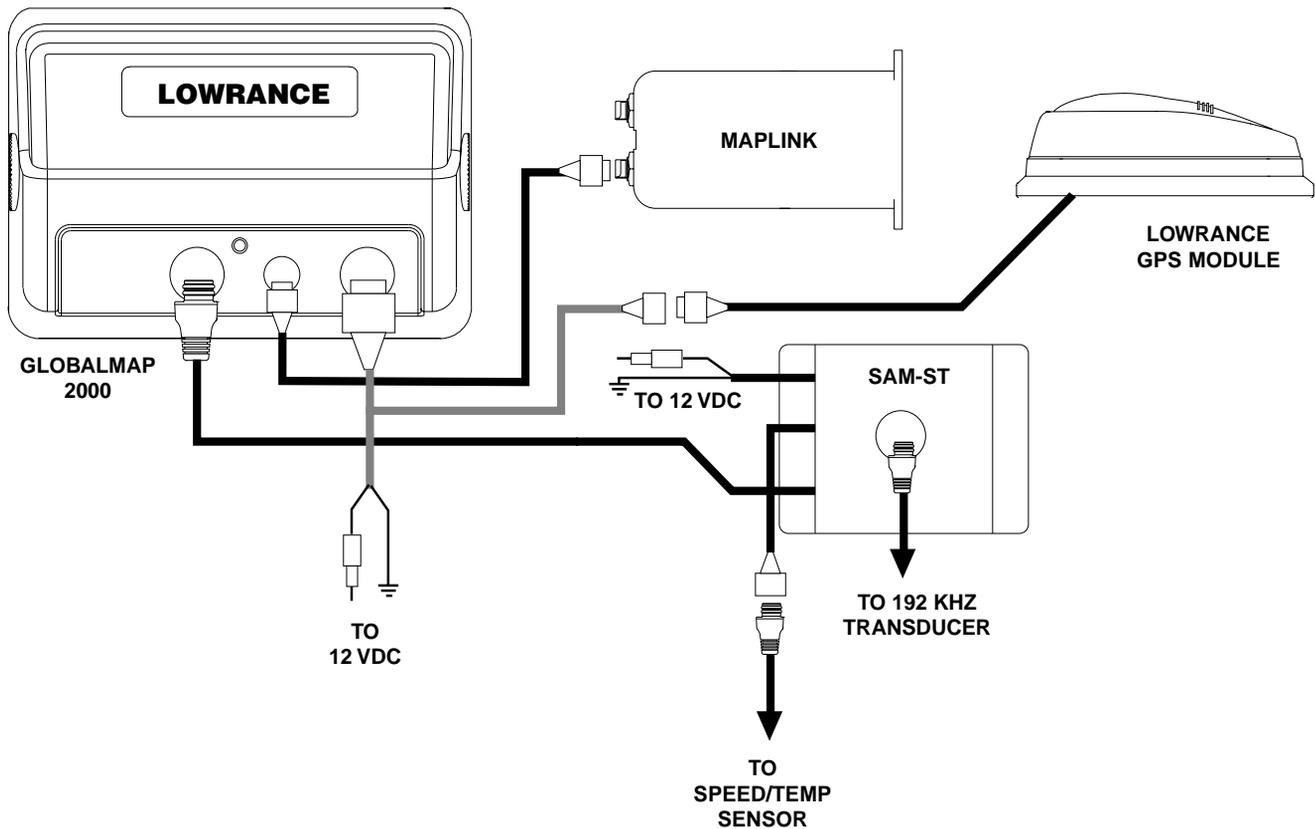
DGPS DUAL FREQUENCY INTERFACE WIRING





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NMEA 0183, VERSION 1.5 WIRING CONNECTIONS

The shielded red and green wires are for a NMEA 0183, version 1.5 interface. The GlobalMap 2000 sends data to other electronic navigation devices through the green wire and receives NMEA data through the red wire. If the red and green wires are not used, tape their ends so that they cannot short.

To connect a device to the mapping unit's NMEA 0183 version 1.5 **input** (send data to the GlobalMap 2000), attach a twisted pair cable from the device's NMEA output to the red shielded wire on the NMEA cable and the black wire (ground) on the POWER cable. (See page 12 for wiring diagrams.)

To connect a device to the NMEA 0183 version 1.5 **output** (GlobalMap 2000 sends data to another device), attach a twisted pair cable from the other device's NMEA 0183 input to the green wire on the NMEA cable and the black wire on the POWER cable. See the other instrument's manual for more wiring instructions.

NMEA VERSION 2.0 WIRING CONNECTION

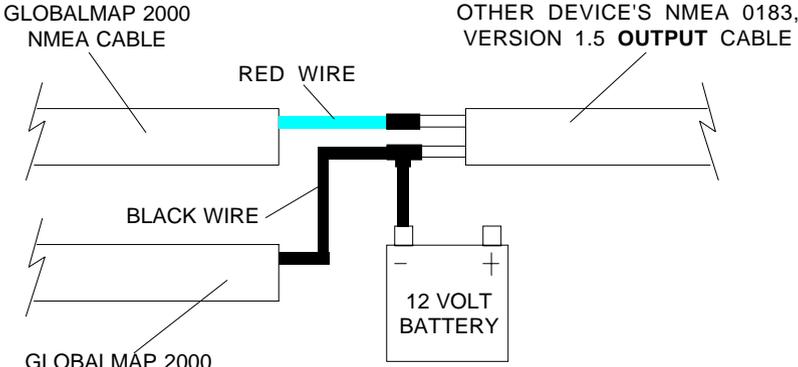
Use the four shielded red, black, white and green wires on the NMEA cable for a NMEA 0183, version 2.0 interface. This is a shielded, balanced line interface. Do not use the shield on these wires! Trim the shield back, away from the splice when you attach wires from another device to the mapping unit. The GlobalMap 2000 sends data (transmits) to another electronic navigation device through the shielded white and green wires and receives NMEA data through the shielded red and black wires. If any of these wires are not used, tape their ends so that they cannot short.

To send version 2.0 data to the GlobalMap 2000, connect the other device's NMEA 0183 version 2.0 output to the mapping unit's NMEA 0183 version 2.0's input (GlobalMap receives data) by attaching a twisted pair cable from the other device's NMEA output to the shielded red and black wires on the mapping unit's NMEA cable.

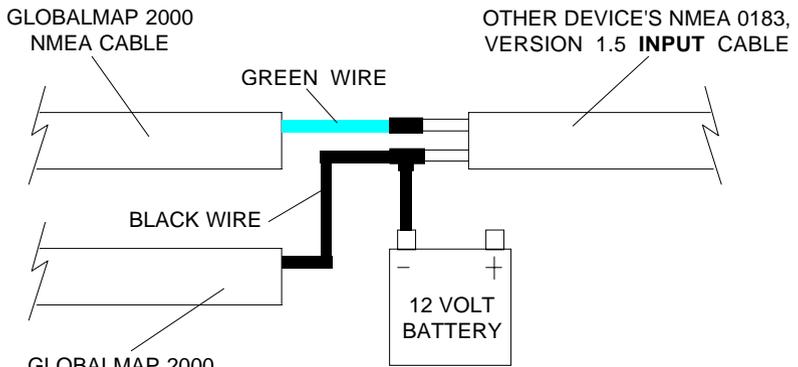
In order for the GlobalMap 2000 to send data to another device, connect the other device's NMEA 0183 version 2.0 input to the mapping unit's NMEA 0183 version 2.0's output (GlobalMap sends data) by attaching a twisted pair cable from the other device's NMEA input to the shielded white and green wires on the mapping unit's NMEA cable.

For the GlobalMap 2000 to both send and receive NMEA 0183, version 2.0 data, see the wiring diagram at the bottom of page 13.

NMEA 0183, VERSION 1.5 WIRING CONNECTIONS

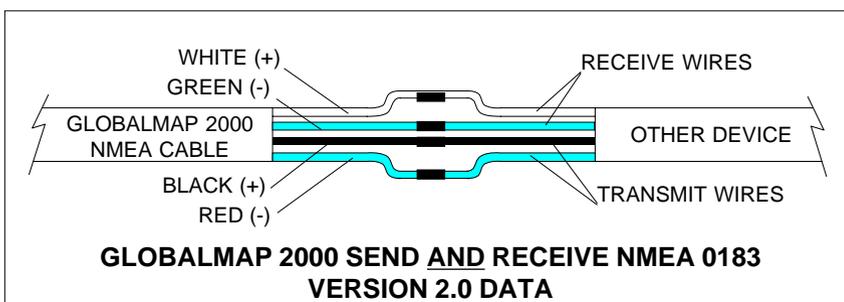
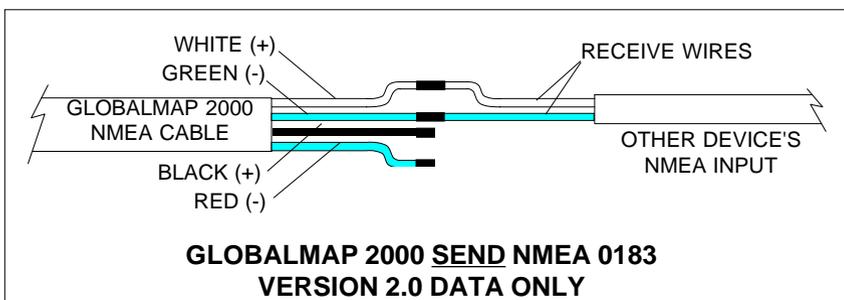
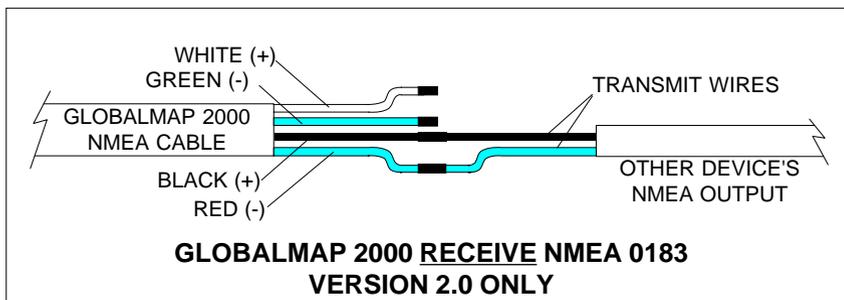


**GLOBALMAP 2000 RECEIVING
NMEA 0183 VERSION 1.5 DATA
FROM ANOTHER DEVICE**



**GLOBALMAP 2000 SENDING
NMEA 0183 VERSION 1.5 DATA
TO ANOTHER DEVICE**

NMEA 0183, VERSION 2.0 WIRING CONNECTIONS

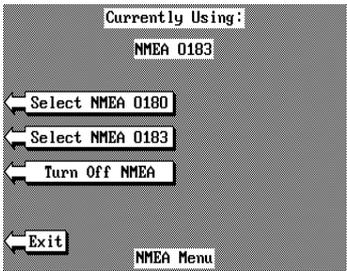


Remember, under no circumstances should the shields on the GlobalMap's wires be connected to the ground on the other device. See the other instrument's manual for more wiring instructions.

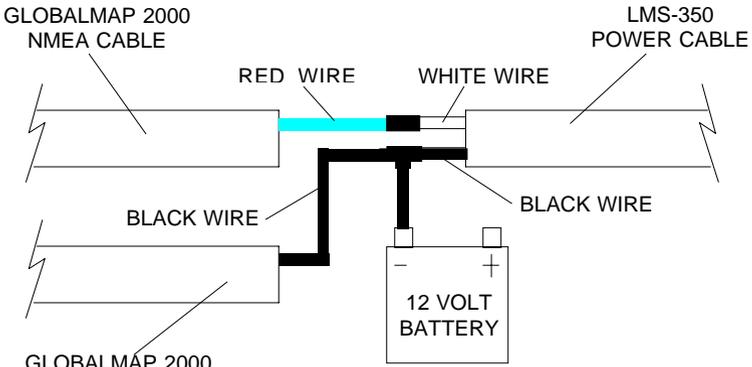
NOTE: When using the shielded wires (NMEA 0183 version 2.0), do not connect the shielded black wire on the NMEA cable to the battery's ground.

Connecting a LMS-350/350A to the GlobalMap 2000

To connect a Lowrance LMS-350 or LMS-350A with a GPS module to the GlobalMap 2000, first follow the wiring diagram at the bottom of this page. After all wiring is completed, plug the two units in and turn them on. On the LMS-350, then press the GPS key, then the MENU key. Now press the key next to the "Change GPS Settings" label. Press the key next to the "Select NMEA" label. The screen shown at right appears. Now press the key next to the "Select NMEA 0183" label. Finally, press the key next to the "Exit" label. The LMS-350 will send position information to the GlobalMap 2000 as soon as the GPS module locks on to the satellites. The GlobalMap 2000 doesn't need any setup.



LMS-350 MENU



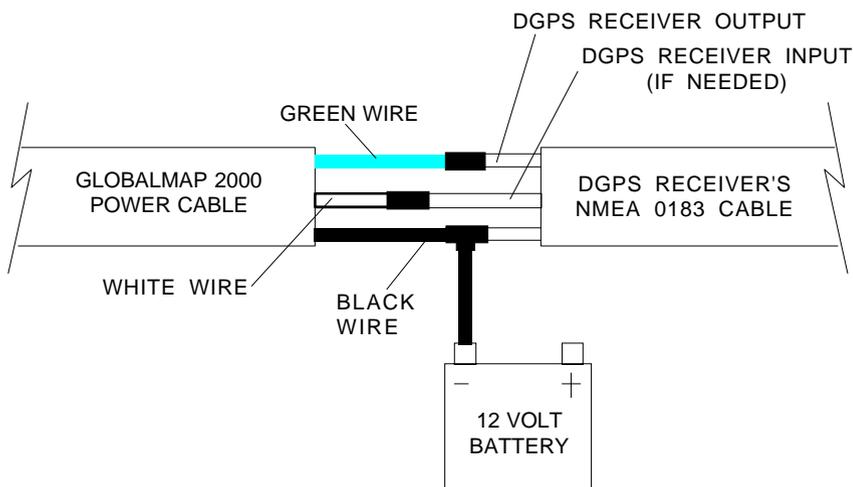
GLOBALMAP 2000 RECEIVING NMEA 0183 VERSION 1.5 DATA FROM THE LMS-350

DGPS BEACON RECEIVER CONNECTIONS

If a Lowrance GPS module is connected to the GlobalMap 2000, any brand of differential (DGPS) beacon receiver can also be connected, giving you higher accuracy positions in the area covered by the beacon receivers. The unshielded green and white wires on the POWER cable are used for the differential (DGPS) beacon receiver. (Note: You can also use the diagram on pages 7 or 8 if you're using a Lowrance DGPS receiver.)

To connect the beacon receiver, attach a twisted pair cable from the beacon receiver's **output** to the green and black wires (unshielded) on the mapping unit's POWER cable as shown below. Solder the ground conductor of the twisted pair to the black wire on the power cable. If needed, also attach a twisted pair cable from the beacon receiver's **input** to the white and black wires on the mapping unit's POWER cable. (Not all beacon receivers require an input.)

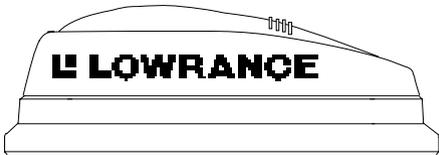
After the beacon receiver is connected, see the "GPS/DGPS Setup" section for information on setting the communication parameters for the DGPS receiver.



GLOBALMAP 2000 DGPS RECEIVER CONNECTIONS

The LOWRANCE LGC-1 GPS MODULE

This GPS receiver is small, rugged, and fast. The five channel design lets it track all satellites in view and acquire up to five satellites at one time. It sends position information once every second. By incorporating Rockwell's GPS receiver technology with Lowrance's state-of-the-art design and manufacturing capabilities, Lowrance brings to the consumer one of the most advanced line of GPS marine navigation systems available in the world.

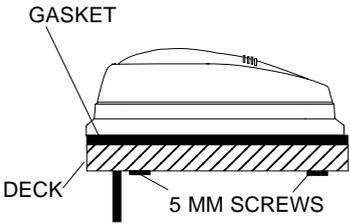
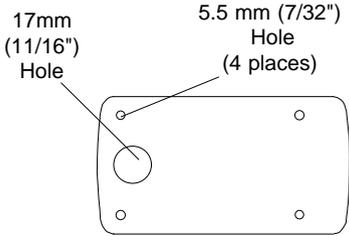


LGC-1 GPS MODULE INSTALLATION

The GPS module can be installed on a flat surface or (with the supplied adapter) on a pole. Mount the module in an area that guarantees a clear view of the sky at all times. In order for the module to receive the signals from the satellites, it must not be obstructed. An ideal location is on a cabin roof, or deck. The gunnels also make a good location. Attaching the pole mounting adapter let you install the module on a one inch mast. However, for lightning protection, the antenna shouldn't be the highest part of the boat.

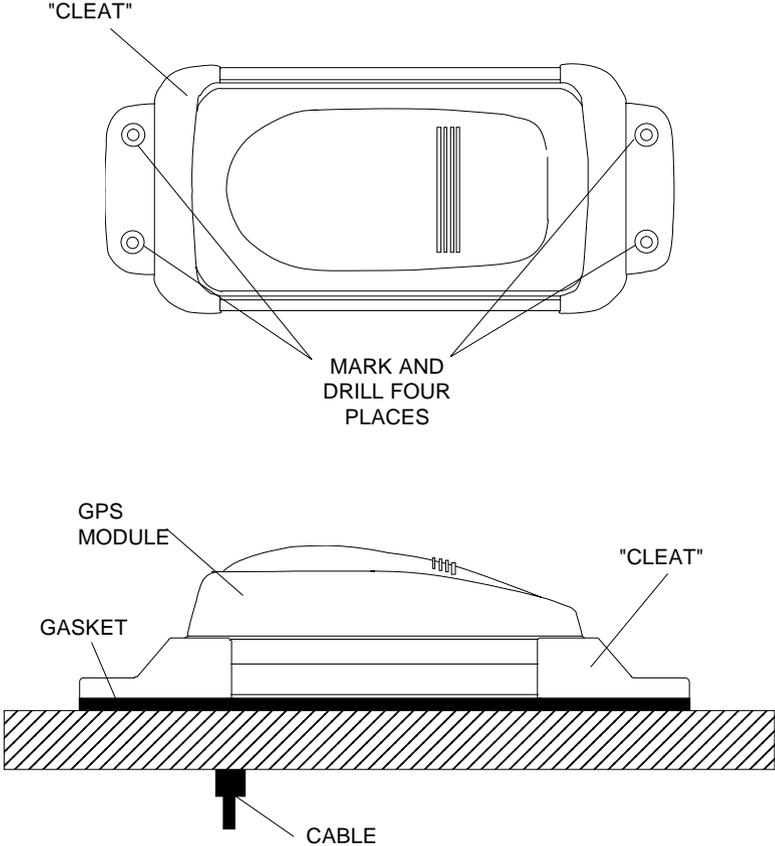
Surface Mounting - With Access

If you have access underneath the mounting surface, use the gasket supplied with the GPS module as a template. Drill four 5.5 mm (7/32") holes and one 17 mm (11/16") hole for the module's cable. Attach the cable to the module and pass it down through the hole in the gasket and the mounting surface. Use 5 mm screws, flat washers, and lock washers to fasten the GPS module to the mounting surface. Route the cable to the GlobalMap 2000.



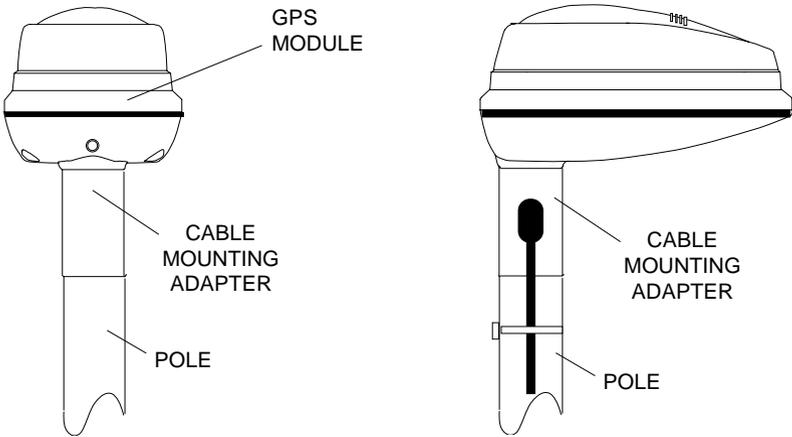
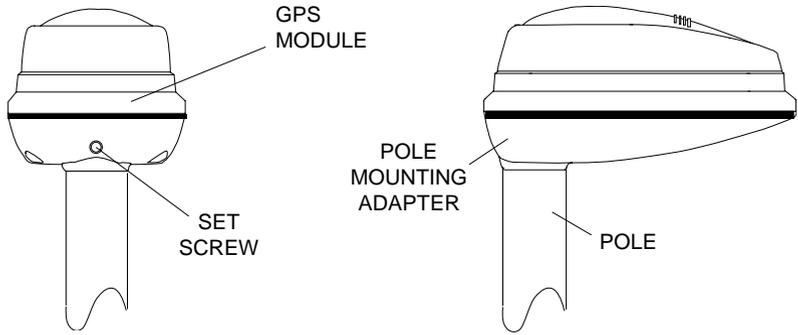
Surface Mounting - Without Access

If you don't have access to the back side of the mounting surface, use the "cleats" supplied with the GlobalMap 2000. (Note: This is assuming you can "snake" the module's cable to a location that is accessible. A hole will still need to be drilled in the mounting surface for the cable.) Using the gasket as a template, mark and drill the 17 mm (11/16") hole for the cable. Attach the cable to the module and drop the other end of the cable through the gasket and down the hole. Place the module on the gasket. Slide the "cleats" onto each end of the module and (using the cleats as templates) mark four holes for 5 mm (#10) mounting screws. Drill the holes, then replace the cleats on the module and fasten them to the mounting surface with 5 mm (#10) screws. Route the cable to the GlobalMap 2000.



Pole Mount

First, thread the pole mounting adapter onto the mounting pole or ratchet base. Align the pole mounting adapter so the module will face the bow of the boat. Install and tighten the set screw into the pole mounting adapter and tighten it securely. This should prevent the GPS module from unscrewing from the pole. Place the gasket onto the pole mounting adapter. Now attach the cable to the GPS module and pass the cable through the gasket, pole mounting adapter, and pole. Set the GPS module on top of the pole mounting adapter and align the four threaded holes in the module with the holes in the pole mounting adapter. Using the four stainless steel 5 mm screws and lock washers supplied with the LGC-1, attach the pole mounting adapter to the GPS module. This completes the assembly. If the pole or mast you're using isn't hollow or if the hole in the middle of the pole is too small for the connectors, use the cable mounting adapter supplied with your unit. Thread the cable mounting adapter into the GPS pole mounting adapter. Then thread the pole into the cable mounting adapter. Route the cable down the outside of the pole.



SAM SONAR ACCESS MODULE

In order for the GlobalMap 2000 to show sonar data, a sonar access module (SAM) and transducer must be installed. Follow the installation instructions included with the sonar access module. Route the cable from the sonar module to the black connector on the GlobalMap 2000. (Note: The black sonar connector on the GlobalMap 2000 is covered by a black plastic cap. Carefully pry this cap off to gain access to the connector.) Follow the installation instructions included with the transducer and mount it on the boat. Route its cable to the sonar module and plug it into the black connector. The sonar module is now ready for use.

LOWRANCE INLAND MAPPING SYSTEM

Until recently, people using inland lakes and rivers were left out of the electronic mapping market. Lowrance has addressed this market with our "IMS SmartMap™" series of mapping cartridges that use the MapLink™ to connect to the GlobalMap 2000. All of the contiguous 48 states are covered by these cartridges, allowing exceptional detail of lakes and rivers. Also, cities, towns, highways, and roads are shown on these maps. To order these cartridges, contact your local dealer or LEI Extras at 1-800-324-0045 (USA only).

MAPLINK™

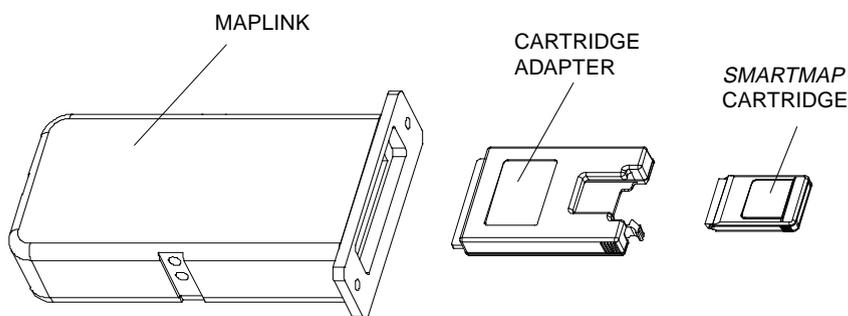
The GlobalMap 2000 has an internal "background" map that covers almost the whole world. It shows southern Canada, all of the continental United States, and Mexico at a higher resolution than other countries. This map is sufficient for most users, however, Lowrance has an optional cartridge reader called the Maplink™ that accepts IMS SmartMap™ and C-MAP cartridges. The SmartMap™ cartridges were created by Lowrance and have highly detailed maps of the continental United States. The C-MAP cartridges have small coastal area maps built into them that allows you to "zoom" in and see much more detail than is available on the built-in map. The Maplink also has the C-MAP background map built into it, so you have the option of using it or the Lowrance background map at any time, even if a C-MAP cartridge isn't plugged into the Maplink.

To install the Maplink, follow the instructions included with it. It can be mounted on top of the dash, under the dash, or in the dash for a clean, professional look. Once it's installed, route the cable included with the Maplink to the small connector on the back of the GlobalMap 2000. If the supplied cable is too short, an extension cable, model MLXT-12 is available that is 12 feet long. After connecting the cable, the Maplink is ready for use. The Maplink receives its power through the connecting cable, simplifying the installation.

Notice!

You can attach up to seven Maplinks to the GlobalMap 2000. This lets you use different maps without having to unplug one and replace it with another when you move out of the first map's area. This also allows the mounting of the Maplinks under the dash, out of sight.

The Maplink accepts the large C-Map cartridges without adapters. Lowrance IMS SmartMap cartridges and Lowrance supplied C-Map cartridges require an adapter that comes with the Maplink as shown below.



If you're not using the Maplink or Lowrance Inland Mapping Modules, connect the small gray terminator plug supplied with the GlobalMap 2000 into the small connector on the back of the unit. This will protect the connector on the back of the unit from the elements.

KEYBOARD

The keyboard has keys arranged in a vertical column on the left, plus a horizontal row at the bottom. A ten-key pad and arrow keys on the right side of the screen let you enter and change data on the screen. The menu key in the bottom left corner of the keyboard activates the first menu page. The keys along the bottom of the screen are used to switch between maps and the digital navigation, steering, and position screens. The Event Marker key lets you place icons on the display, while the Man Overboard key is used for emergencies.

MAP - Press this key to show the Mapping Screen.

NAV - This key shows the digital navigation screen.

STEER - Press this key to show the Steering Screen.

SONAR - This key switches the unit to the sonar displays.

ZOOM IN - Expand the map to see more detail by pressing this key.

ZOOM OUT - To see a wider area of the map, press this key.

CENTER - Centers the map around your present position.

CURSOR - Pressing this key activates the moveable cursor lines.

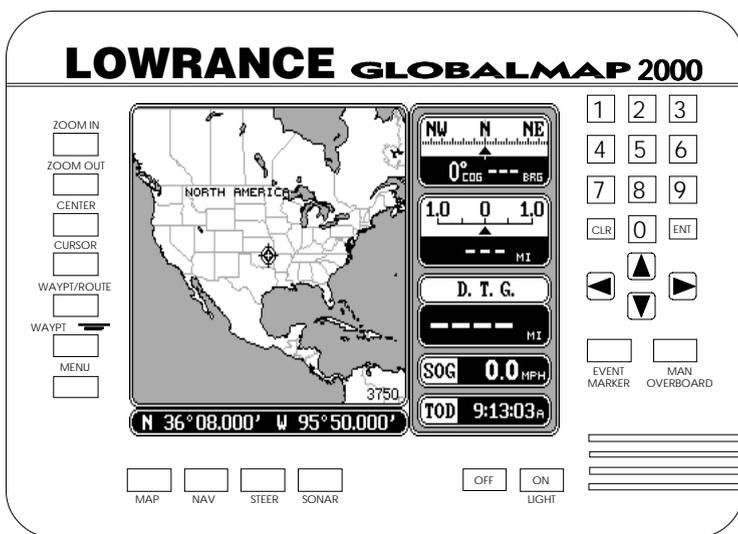
WAYPT/ROUTE - This key lets you save or recall a waypoint or route.

WAYPOINT QUICK SAVE - Pressing this key instantly saves your position.

EVENT MARKER - To mark a location on the plotter screen, use this key.

MAN OVERBOARD - Pressing this key instantly saves your present position and switches the unit into a mode that shows navigation data to the last saved position.

ARROW KEYS - These keys are used to make menu selections and to move the cursor lines on the screen.



CLR - This key clears menus and erases entries from the screen.

ENT - This key is used to enter numbers and make selections.

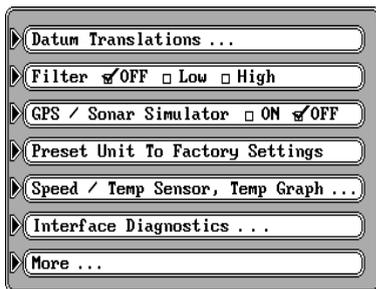
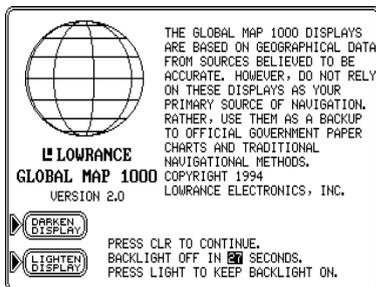
ON - The ON key turns the GlobalMap 2000 on. Pressing this key after turning the unit on also turns the display and keyboard's lights on.

OFF - Press and HOLD the OFF key to turn the mapping unit off.

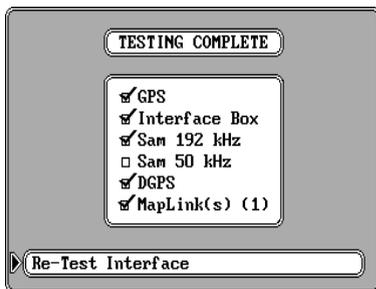
Interface Test

You can test the mapping unit and it's accessories after they're installed to make certain all of the cables are connected properly.

To do this, make certain all of the accessories are connected to the mapping unit. Then press the ON key. The screen at right appears. Press the CLR key to erase this screen. Now press the MENU key three times. Each time you press the MENU key, a new list of menu items appear on the screen. You should be viewing the screen shown at right. Press the key next to the "Interface Diagnostics" label. The screen shown below appears.



A list of the possible Lowrance accessories is on this screen. A check mark appears next to the item if it is communicating with the mapping unit. To run this test again, press the key next to the "Re-Test Interface" label at the bottom of the screen.



Press the CLR key to erase this screen.

GETTING STARTED - INITIALIZATION AND I/O

Once all power and data connections have been made, the next step is to turn the GlobalMap 2000 on. A message appears on the screen. Press the CLR key to erase this message. If a Lowrance GPS module is connected, then the mapping unit sends a "cold-start" message to the module. The module will then start looking for the satellites. It can take up several minutes for the module to determine your position. To speed up this process, you can initialize the module by sending it your present position, time, altitude, and date. See below for details on initializing the GPS module.

If you have another manufacturers GPS or Loran-C receiver connected to the GlobalMap 2000 through the NMEA cable, the mapping unit will show the present position as soon as the receiver sends it. If you're certain the navigation receiver is sending position data, but the present position display continues to flash for over 15 seconds, (signifying that it isn't receiving data) then check all wiring connections.

SAM modules start working at the same time the mapping unit is turned on. The mapping unit also automatically sends both versions of NMEA 0183 data at power-on.

Initialization - GPS Module

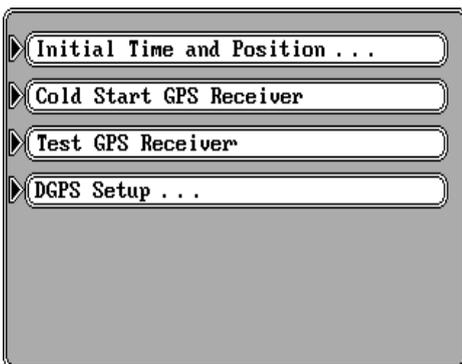
Note: Read this section only if you have a GPS module connected to the GlobalMap 2000. If you are using the NMEA 0183 input for position information, skip this part.

In order for the GPS module to send position information, it must first find the satellites. If you simply turn the unit on and wait, the unit will find them by itself in 15 minutes or less. This is called "Cold Start." If you let it find the satellites, the time display will probably be wrong, since it will be showing UTC time or the time at Greenwich, England. However, all other navigation displays, including the position display will be correct. (You can set the time to your local time.) To speed up the satellite acquisition process, you can initialize the GPS module or "tell it where it is" the first time it's turned on. This initialization process is usually done only once and requires the following data:

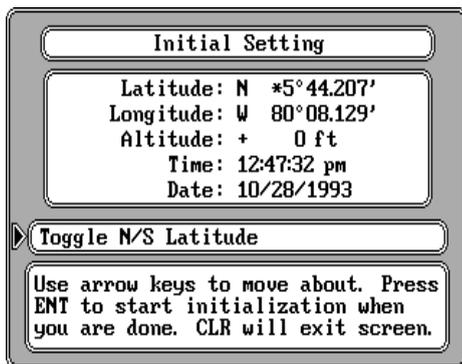
1. Your present position in latitude/longitude.
2. Your elevation above sea level (altitude).
3. Today's date and time.

The unit usually only takes a few minutes or less to find the satellites once it's been initialized by the user.

To initialize the GPS module, first press the MENU key. Now press the key next to the "GPS /DGPS Setup" label. The screen at right appears. Finally, press the key next to the "Initial Time and Position" label. The screen shown below appears.



This is the GPS module initialization screen. The settings now in use are shown at the top of the display. The first number in the latitude display should be flashing. If you're using the unit for the first time, these settings are probably wrong for your position and time. To change any of the numbers on this display, simply press the arrow keys to move to the desired number that you wish to change. For example, to change the latitude to 41°18.023', first press the 4 key while the "3" in the latitude is flashing. This changes the "3" to a "4". It also moves one digit to the right, making the number "5" start flashing. Now press the 1 key.



Continue until all of the numbers in the latitude have changed. If you need to change the latitude from north to south, press the key next to the "Toggle N/S latitude" label in the middle of the screen. When you're finished with the latitude, press the down arrow key once. This moves you to the longitude field. An asterisk (*) flashes in front of the "8" in the longitude. If your longitude is less than 100 degrees, simply press the right arrow key to move to the "9", then enter your present longitude the same way you entered the latitude. If your longitude is over 100 degrees, simply enter your present longitude. The label at the middle of the screen now shows "Toggle E/W Longitude". Press the key next to this label to change the longitude from west to east, if necessary.

Continue entering your altitude, present time and date the same way you entered your present position. If you make a mistake entering a number, use the arrow keys to move back to the number that you wish to change, then enter the correct number.

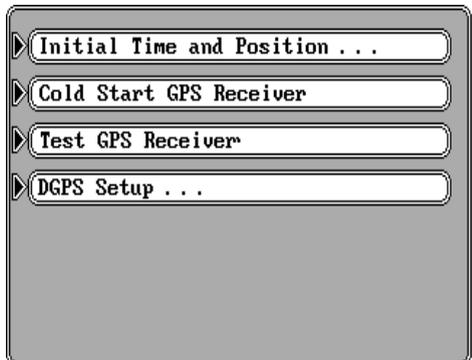
When all of the numbers on the screen are correct, press the “ENT” key. This sends the values you entered to the GPS module which should shorten the time required for it to find the satellites and return your present position. If you don’t move a long distance (over 100 miles) with the unit turned off, then you probably won’t need to do the initialization again, since it stores all of the last known position settings in memory each time it’s turned off. An internal clock keeps track of the time, even when the unit is turned off, so that it will be correct the next time it’s used.

Once the GPS module finds the satellites and displays the correct latitude/longitude for your position, then the GlobalMap 2000 is ready for use.

COLD START

When the GlobalMap 2000 is turned on for the first time “out of the box”, it automatically sends a “cold start” message to the Lowrance GPS module. You can also send a cold start message to the receiver. If the unit can’t lock on to the satellites using the data you’ve given it, or if it has trouble finding the satellites, perhaps it is using the wrong data. This can happen if you’ve entered the wrong data by accident. For example, given it east longitude instead of west. Or if you’ve moved a long distance with the unit turned off.

To send a cold start message to the receiver, first press the MENU key. Now press the key next to the “GPS/DGPS Setup” label. The screen at right appears. Finally, press the key next to the “Cold Start GPS Receiver” label. The unit will begin a cold start technique to find the available satellites. It should lock on to them in less than 15 minutes. Remember, when it does, your local time

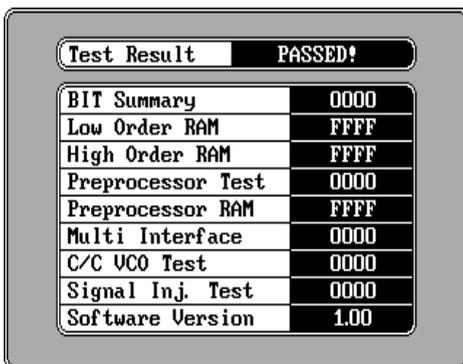


and possibly date display will probably be wrong. Use the method shown above to set the time and date. Once this is done, an internal clock will keep the correct time, even when the unit is turned off. The GPS system updates this clock when the unit is locked on to the satellites.

GPS RECEIVER TEST

If you have a GPS module connected to the GlobalMap 2000, a test can be performed on the receiver inside the module. This tests many parameters of the receiver, letting you know if there is a malfunction. If the GPS module fails any of the tests shown on the screen, then contact the Lowrance Factory Customer Service Department.

To activate the receiver test, first press the MENU key, then press the key next to the “GPS/DGPS Setup” label. Now press the key next to the “Test GPS Receiver” label. The screen shown at right appears. “Testing” appears in the box at the top of the screen while the test is in progress. This will take several seconds. When the test is over, “PASSED” appears at the top of the screen if the module passed the test and “FAILED” if there’s a problem. The boxes on the screen show the results of each test. These results are coded and will show either “FFFF” or “0000”. The version of the software used in the GPS module appears at the bottom of the screen.



Test Result	PASSED!
BIT Summary	0000
Low Order RAM	FFFF
High Order RAM	FFFF
Preprocessor Test	0000
Preprocessor RAM	FFFF
Multi Interface	0000
C/C VCO Test	0000
Signal Inj. Test	0000
Software Version	1.00

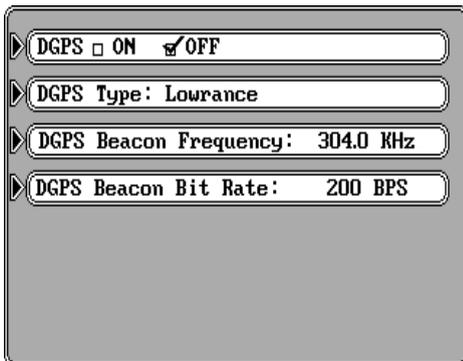
To exit this screen, press the CLR key.

DGPS SETUP

Some areas have installed or are planning to install differential transmitters that send correction data to a special receiver. The U.S. Coast Guard has installed many differential transmitters along coastal waters, navigable rivers, and the Great Lakes. When a DGPS receiver is connected to the GlobalMap 2000 along with a Lowrance GPS module, highly accurate positions can be plotted. If you have a differential (DGPS) beacon receiver connected, you’ll need to make some settings on the GlobalMap 2000. To do this, first press the MENU key, then press the key next to the “GPS/DGPS Setup” menu. Now press the key next to the “DGPS Setup” label. The screen shown at the top of the next page appears. Turn the DGPS input on by pressing the key next to the “DGPS” label. Next, select the type of DGPS receiver that’s connected to the mapping unit by pressing the key next to the “DGPS Type: label. A list of DGPS receivers appears. Select your receiver by pressing the key adjacent to it’s label. See your DGPS receiver’s owner’s manual if your receiver isn’t listed. You may be able to use one of the receivers on the list or use RTCM104.

RTCM 104

The GlobalMap 2000 can “talk” to the beacon receiver using RTCM104, a standard communications language. With this protocol, all you need to do is set the baud rate to the same as the one used by your beacon receiver. The unit’s default is 4800 baud. If your unit uses a different baud rate, press the key next to the “Serial Communication” label. A new screen appears with different baud rate labels. Press the key next to the desired label, then press the CLR key. If the beacon receiver is connected and turned on, differential correction data should now be received by the mapping unit. Press the CLR key to exit this screen.

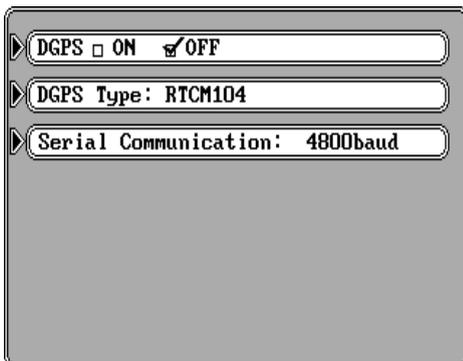


DGPS ON OFF

DGPS Type: Lowrance

DGPS Beacon Frequency: 304.0 KHz

DGPS Beacon Bit Rate: 200 BPS



DGPS ON OFF

DGPS Type: RTCM104

Serial Communication: 4800baud

Lowrance, Starlink, and Magnavox Beacon Receivers

The Lowrance, Starlink and Magnavox beacon receivers must have the frequency and bit rates set.

Most DGPS transmitters have different frequencies and bit rates. The GlobalMap 2000 needs to know the frequency of the transmitter and its bit rate that you will be using with the Lowrance, Starlink, or Magnavox beacon receivers. To enter the DGPS transmitter’s frequency, first select the desired receiver. Now press the key next to the DGPS Beacon Frequency label. Using the numbered keys, enter the frequency of the transmitter. Press the ENT key when you’re finished. Next, press the key next to the “DGPS Beacon Bit Rate:” label. Enter the bit rate, again using the numbered keys. Press the ENT key when you’re finished. If you have a Starlink beacon receiver, you may not have to enter the frequency or the bit rate. Simply press the key next to the “Automatic Mode” label and the Starlink receiver will tell the GlobalMap 2000 the transmitter frequency and bit rate, automatically.

When you’re finished with this screen, press the CLR key. The GlobalMap

should start using the data from the differential beacon receiver. See the "DGPS Beacon Receiver Status" section for more information.

GPS/DGPS INFORMATION SCREENS

Note: These screens will have only partial or no data if the GlobalMap 2000 is receiving its data from another navigation receiver through the NMEA 0183 input. You must have a Lowrance GPS module connected to the mapping unit in order to fully use the satellite information screen.

This screen shows technical data about each satellite in view. This includes data from the GPS model which shows the location of each satellite in the sky, it's identification number and more. To see this display, press the MENU key, then press the key adjacent to the "Status Screen" label. The screen shown below appears.

The GPS receiver's status shows in the upper left corner of the screen. This tells you if the unit is in the 2D mode (position only), 3D mode (position and altitude), or if DGPS is operational. Your present position, altitude, time, and date show beneath the status.

GPS	3D Navigation					DGPS	Not Responding				
Pos	N 36°09.498' W 96°17.965'					ID					
Alt	624 _{FT}					Freq	KHZ				
Time	2:29:37 _{PM}					Rate	BPS				
Date	1/09/1998					SNR	DB				
Fix	8					Sig					
Age											

PRN	18	3	28	31	22	14						
TRK	T		S	T	T	T						
ELV	68	45	43	37	25	12						
AZM	292	93	86	154	49	198						
SNR	47		0	40	44	35						
DGPS												

Beneath the date display is the fix status. The fix quality has a range from 0-9. 9 is the best, 0 the worst. As the fix number decreases, the position's "jitter" increases. Jitter is the small position changes your present position symbol makes when you're not moving. This movement is normal and happens in all electronic navigation equipment.

The satellites that are in view of the receiver show at the bottom of the screen. The Lowrance GPS module will track all of the satellites in view. Using a multiple channel GPS receiver, it will use up to four satellites to calculate position. The other channels track the remaining satellites. Every satellite in the constellation has a number assigned to it, called the PRN. The PRN is the first row. TRK stands for "track." If the GPS module is tracking the satellite, then a "T" is placed in this column. If it's searching for the satellite, then a "S" appears. ELV is the elevation (height) of the satellite above the horizon from your position. AZM is the azimuth or direction of the satellite from your position. For example, if the azimuth of a satellite is 180 degrees, then it is due south. SNR is the signal-to-noise ratio. This tells you

how strong the satellite's signal is. The higher the SNR number, the better.

To exit this screen, press the MAP, NAV, STEER, or SONAR keys.

DGPS BEACON RECEIVER STATUS

With both a Lowrance GPS module and a DGPS beacon receiver connected to the GlobalMap 2000, then DGPS receiver status shows on the status screen. Again, to view this screen, press the MENU key, then press the key next to the "Status label. A screen similar to the one below appears.

The status of the DGPS receiver shows at the screen's top right side. If the mapping unit is receiving good data from the DGPS receiver, the word "Operational" appears at the top of this screen. Next are shown the station identification (ID), station frequency (Freq), station data transmission rate (Rate), signal-to-noise ratio (SNR), signal strength (Sig), and age status (AGE).

GPS	3D DGPS Nav				DGPS	Operational				
Pos	N 36°09.498' W 96°17.965'				ID	162				
Alt	624 FT				Freq	299.0 KHZ				
Time	2:29:37 PM				Rate	200 BPS				
Date	1/09/1998				SNR	30 DB				
Fix	8				Sig	100				
					Age	4				
PRN	18	3	28	31	22	14				
TRK	T		S	T	T	T				
ELV	68	45	43	37	25	12				
AZM	292	93	86	154	49	198				
SNR	47		0	40	44	35				
DGPS	OK			OK	OK	OK				

At the very bottom of the screen are the DGPS statistics (DGPS). An "OK" in this field means that the DGPS corrections for that satellite are good. A blank in this field means that there is no corrections for that satellite.

To exit this screen, press the MAP, NAV, STEER, or SONAR keys.

MAP OPERATION

MAPPING/NAVIGATION/STEERING/SONAR DISPLAYS

This mapping unit has mapping, navigation, steering indicator, satellite information and sonar screens. These displays were designed to show the most important data. However, you can change all of them (except the satellite information) to some extent through the "Customize Display" feature on the second GPS menu screen. To change these screens, see the "Customize" section in this manual.

Each of the following screens is available by pressing a key at the bottom of the unit. A detailed description of each screen follows.

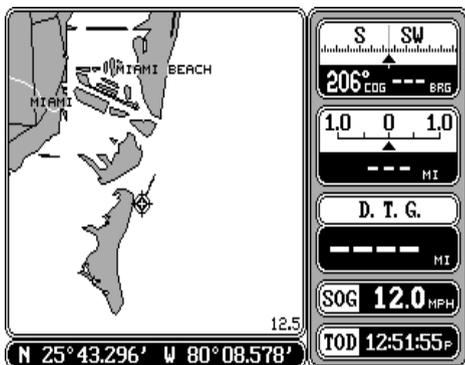
IMPORTANT!

If the data shown in digital numbers on any screen on this unit is flashing, then it means that data is invalid. Do not rely on data that is flashing! For example, if the present position display is flashing, then the unit has lost the position data from the GPS module or NMEA 0183 data input. The position that is flashing is the last known position, not your present position! Do not navigate with this unit until you have found the reason the unit has lost the position data!

MAP SCREEN

The Map screen automatically appears the first time the GlobalMap 2000 is turned on and after a preset. You can also view this screen at any time by pressing the MAP key. A

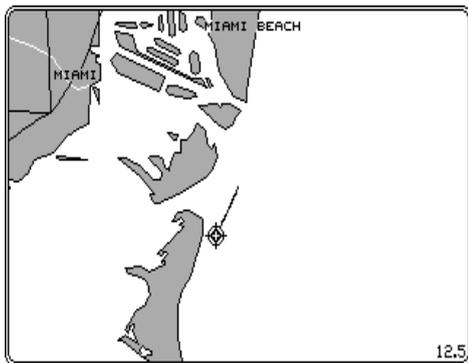
screen similar to the one at right appears. Your present position appears as a circle with a cross on the screen. The latitude/longitude of your present position shows at the bottom of the screen. Each time you switch to this screen, it centers your present position and the map on the display. To zoom in for a closer look, press the ZOOM IN key in the upper left corner. To



zoom out and see a wider area around your present position, press the ZOOM OUT key. The range, or approximate distance from one side of the screen to the other is shown in the lower right corner of the map. Each time you press the ZOOM IN or ZOOM OUT key, the range changes, typically showing you more detail when you're zoomed in or a wider area when you've zoomed out.

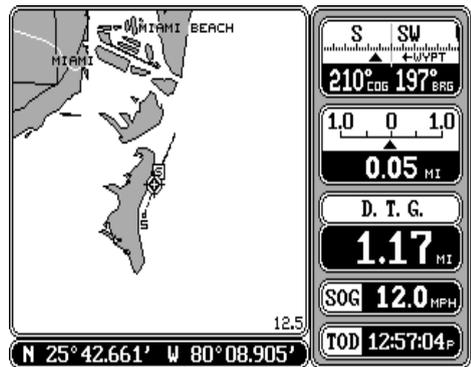
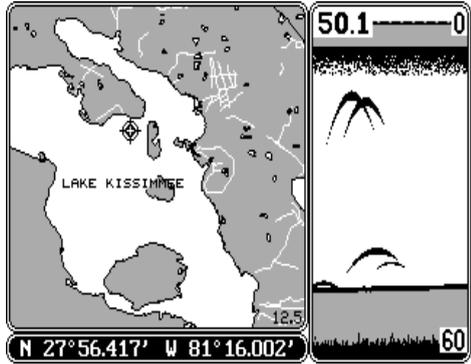
As you travel, the circle showing your present position moves on the screen, too. The line extending from the circle shows the path you've taken.

Pressing the MAP key once while the map is displayed causes the whole display to be used by the map as shown at right. The digital boxes disappear.

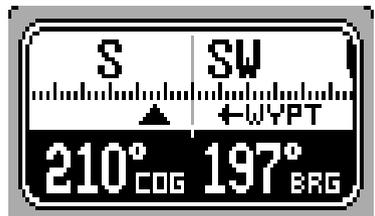


pear. Press the MAP key again to view a “split-screen” map and sonar display as shown below. Pressing the MAP key again returns the unit to the original mapping display.

Boxes on the right side of the screen shown at the bottom of this page show your course over ground (COG), or direction you’re heading, boat speed (SOG), present time (TOD or Time Of Day), and navigation information if you recall a waypoint. (The screen at right shows navigation data to a recalled waypoint.) All of the boxes on the right side of the screen can be replaced with others. In this manner you can customize the screen to your needs. See the Customization section for a detailed description of the boxes not shown on this screen.



The box in the upper right corner of the screen is a combination navigation display. A compass shows your current course over ground at the top of the box. This is the direction you’re travelling. Your course over ground (COG) is also shown in digital numbers in the bottom left corner of this box. The course over ground in this example is 210 degrees.

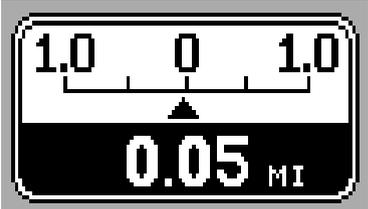


When a waypoint is recalled (see the waypoint navigation section), the direction to the waypoint, or bearing, is shown in the bottom right corner of this box (BRG).

The arrow that points up always shows in the middle of this box. This arrow points to the bearing of the recalled waypoint on the compass. In this example, the bearing is 197 degrees. If you steer the boat so that the arrow that points up is always in line with your course over ground, then you’ll always steer the shortest, most direct route to the waypoint.

If you move to the left or right of the optimum course to the waypoint, another arrow appears on the display with the letters “WYPT”. This arrow points in the direction you should steer the boat to get back on course. In the example shown above, you need to steer the boat to the left to get back on course.

The box shown beneath the compass box is a course deviation indicator, or C.D.I. This box has a pointer that moves to the left or right, depending if you are left or right of the optimum course line. The pointer represents the course line. For example, if you are one-half of a mile to the left of the desired course, the pointer will move to the right, and an arrow pointing to the right appears with the word “STEER” next to it. This means you need to steer to the right to get back on the correct course. The distance from your present position to the course line appears at the bottom of this box. This is called “cross track error”. In this example, the cross track error is 0.05 miles.



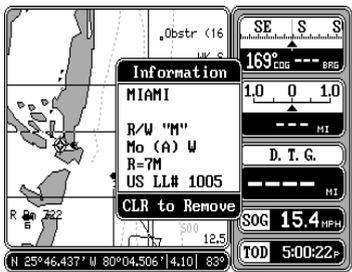
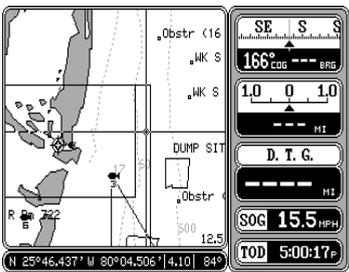
Beneath the C.D.I. indicator are the distance to go (DTG), speed over ground (SOG), and time of day (TOD) boxes.

CENTER MAP

To center the map around your present position (or the cursor), placing it in the middle of the screen, simply press the CENTER key.

C-MAP DATA OPTION

Buoys and other navigational aids have additional information available when using a C-MAP cartridge. To view this data, move the cursor on top of the desired symbol, as shown below left. Now press the ENT key. The screen shown below right appears. An information box shows on the screen, giving information about the selected symbol. To erase this message box, press the CLR key.



MAPPING OPTIONS

The map screen has a number of choices available that let you optimize this screen for your own particular boating or navigation situations. To change the mapping display, first press the MENU key, then press the key next to the “Mapping Setup...” label. The screen shown below appears.

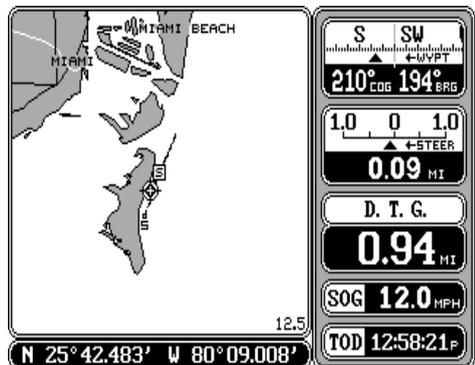
North Up - Course Up - Center

This mapping unit can display the map in the conventional “north-up” presentation when it’s first turned on or after a preset. This means north is always at the top of the screen. If you’re using the Lowrance background map built into the GlobalMap 2000 or a Lowrance IMS SmartMap™ cartridge, you can change to the “course-up” orientation. In this mode, the map rotates as you change directions. It always keeps your trail moving straight towards the top of the screen, no matter what your actual heading is. The “Center” mode keeps your present position at the center of the screen and moves the map around it.



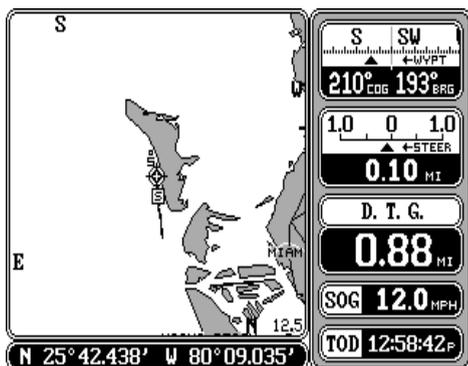
Note: The GlobalMap 2000 won't operate in the course up or center modes when the C-MAP background map is in use.

For example, in the traditional “north-up” mode as shown at right, no matter which way you turn, north is always at the top of the display. If you’re travelling due south, a turn to the left (east) will look like a turn to the right on the display. However, with a “north-up” display as shown at the top of the next page, your course line is always straight up, and the map

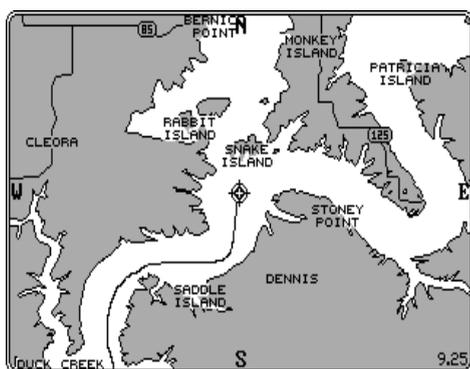


rotates around your present position. Although this may look confusing at first, it actually makes reading the map easier. For example, no matter which direction you’re travelling, features on the map should match your view outside: an inlet on your left will be shown on the left on the map, an island on your right will show on the right on the map, etc.

The “Center” mode (shown below right) keeps your present position in the center of the mapping display. The map is always in the “north-up” mode and scrolls around your present position as you travel. This mode is similar to the north-up mode, it just moves the map instead of your present position. Using this method always makes it easy to find your position on the map.



To change from the north-up to the course-up or center modes, simply press the MENU key, then press the key next to the “Mapping Setup...” label. Now press the key next to the “North Up Course Up Center” label until the check mark is on the desired box. Press the CLR key to return to the map screen. To switch back to the north-up view, simply repeat the above steps.



Map Names

Major cities, highways, rivers, lakes, states, and more are shown on the Lowrance background map and Lowrance cartridges. (C-MAP cartridges and background map also show the names of many of these landmarks, but can't be turned off.) When the mapping unit is first turned on or after it's preset, these names are shown on the map. To turn the names off, press the MENU key, then press the key next to the “Mapping Setup...” label. Now press the key next to the “Map Names” label. This moves the check mark from the “ON” to the “OFF” box. Press the CLR key to return to the map screen.

Area Fill

This unit can fill land masses or water with a gray background. Water is filled with gray when the unit is first turned on or after a preset. To fill the land with gray and leave the water white, press the MENU key, then press the key next to the “Mapping Setup” label. Now press the key next to the

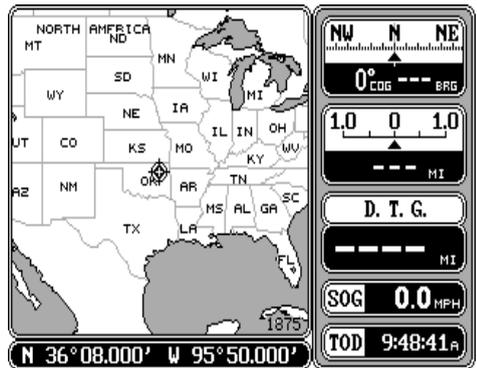
“Area Fill” label to move the check mark from “Water” to “Land”. Now press the CLR key. The unit returns to the map screen with the land filled with gray.

Cartridge Switch

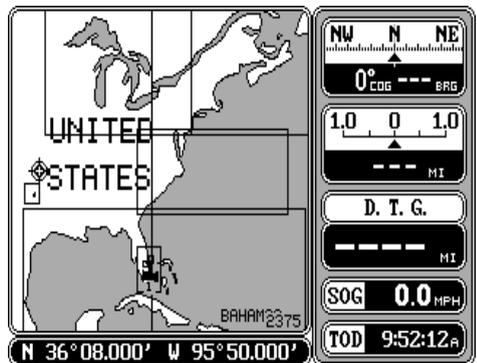
The mapping unit can use either Lowrance IMS or C-MAP™ cartridges. If you wish to use the C-MAP cartridge, you’ll need to purchase the Lowrance Maplink cartridge reader. The mapping unit has a Lowrance map of the world built into it. This is called the “background” map. C-MAP uses their own background map which is built into the Maplink cartridge reader. Information from a C-MAP cartridge can’t be displayed while the Lowrance background map is showing and vice-versa. You must use the C-MAP background with a C-MAP cartridge and the Lowrance background map with the Lowrance inland modules. The default setting is the Lowrance background map and modules.

To switch between the Lowrance and C-MAP maps, press the MENU key, then press the key next to the “Mapping Setup...” label. Now press the key next to the “Cartridge OFF Lowrance C-MAP” label. A message appears: “Press the ENT key to proceed or press the CLR key to quit”. If you pressed the ENT key, the C-MAP background map should now be displayed. If you have a C-MAP cartridge plugged into the Maplink, a box will appear on the map in the area covered by the cartridge. This area lets you “zoom-in” much closer than the standard background map, typically allowing much more detail to be shown.

(Note: It is normal for zooming in or out with C-MAP to be much slower than with the Lowrance maps.)



LOWRANCE BACKGROUND MAP

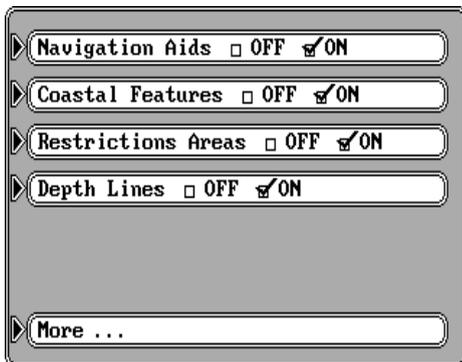


C-MAP™ BACKGROUND MAP

To switch back to the Lowrance map, repeat the previous steps. Switching to the "Off" box in this menu switches all maps off, turning the display into a plotter-only mode.

C-MAP Setup

There are several options available to you if you're using the C-MAP system. C-MAP gives you the capability to turn off or on the map boundaries, navigation aids, coastal features, restricted areas, and depth lines. To change any of these features, press the MENU key, then press the key next to the "Mapping Setup..." label. Now press the key next to the "C-MAP Setup..." label. The screen shown at right appears. Simply press the key next to the label of the feature you wish to change. When you're finished, press the CLR key to return to the map screen or press the key next to the "More" label to return to the mapping setup menu.

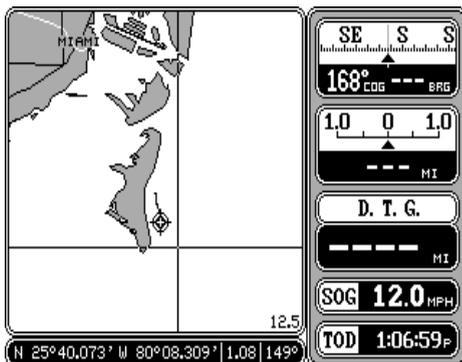


CURSOR

The GlobalMap 2000 has moveable cursor lines that let you pinpoint locations on the map, create waypoints, routes, and more.

There are two ways to activate the cursor lines. The first is to press the CURSOR key. The second is to simply press any arrow key while the map is displayed. Either way, you'll see a screen similar to the one above. When first turned on, the cursor lines intersect your present position on the screen. The latitude/longitude box at the bottom of the screen changes from your present position to the position of the cursor lines on the screen at the same time. The distance and bearing from the cursor lines to your present position show next to the position at the bottom of the screen.

To move the cursor lines anywhere on the screen, simply press the arrow keys. You can press two keys at the same

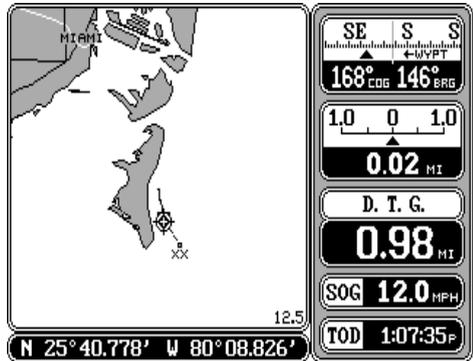


time to move the cursor lines diagonally. In the screen shown on the previous page, the cursor lines are 1.08 miles and 149 degrees from the present position.

Note: The cursor is not available when the map is in the “course up” mode.

If you press the CENTER key while the cursor lines are displayed, the unit will center the map at the position of the cursor lines - not the present position.

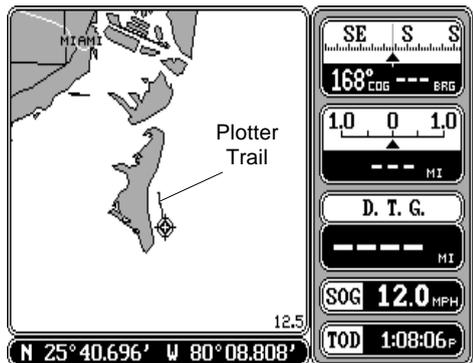
If you want the GlobalMap 2000 to show navigation information to the cursor lines, first move the cursor lines to the desired location, then press the WAYPT/ROUTE key. Now press the key next to the “Navigate to Cursor Position” label. The GlobalMap returns to the mapping screen with navigation data showing in the digital boxes. A dotted line appears on the map from your present position to the cursor, showing the shortest, most direct line to the cursor position. A box with the letter “S” appears at the location you were in when you pressed the “Navigate to Cursor Position” label. The cursor position is marked by a small box and the letters “XX” which remain on the screen, even if you turn the cursor lines off. For more information, see the waypoint navigation section.



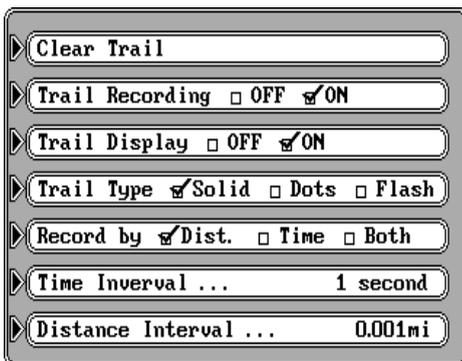
To turn the cursor lines off, simply press the CURSOR key.

PLOTTER TRAIL

Your present position marker leaves a line or “trail” behind as it moves across the map, according to the boat’s movement. This makes it easy to see the path you’ve taken. There are two ways to customize the trail plotter. First press the MENU key. Now press the key next to the “Trail Plotter” label. The screen shown at the top of the next page appears. There are



seven menu selections on this screen, all of which relate to the trail plotter. After you've made a selection on this screen, press the CLR key to exit.



Clear Trail

The first item at the top of the screen is “Clear Trail.” This erases the plot trail from the screen. This is only temporary, the GlobalMap 2000 will continue to draw your trail from the location it was in when the key next to the “Clear Trail” label was pressed.

If you wish to change the plot trail from a solid line to a dotted one, then press the key next to the “Trail Type” label until the check mark is on the desired box.

Trail Recording and Display

To stop the GlobalMap 2000 from drawing the plot trail, press the key next to the “Trail Recording” label. The GlobalMap 2000 not only will stop drawing the plot trail, but also will not keep track of it in memory. However, it will show your trail on the map up to the point that you turned it off. If you wish to temporarily stop the plot trail, but wish to resume its display at a later time, showing the path you've taken, then press the key next to the “Trail Display” label. This turns the plot trail off, but it's still kept in memory. If you turn the trail display on again, it will show your entire plot trail (if there's enough memory.) There's a maximum of 2000 dots available to plot a trail.

Plot Trail - Distance Interval

There's a certain amount of memory reserved for the plot trail. If the unit runs out of memory, then it will continue to draw the plot trail, but for every dot it places at the end of the trail, it will erase one at the beginning. When the unit is turned on for the first time, the unit's plot trail settings are optimized for the typical user. The trail is recorded by the distance travelled, which is preset to draw one dot every 0.001 mile. In other words, every time you move .001 mile, the unit places a dot on the trail behind your present position. The distance can be changed from 0.001 to 10 miles by pressing the key next to the “Distance Interval” menu. The number at the far right of that label shows the distance interval currently in use. Once you press the key next to that label, a new menu appears. Press the key next to the desired distance interval. The unit returns to the Trail Plotter menu.

Plot Trail - Time Interval

If you wish to update the plot trail based on time instead of distance, press the key next to the "Record by" label to move the check mark from "Dist." (distance) to "Time". The default time update is one second. A dot on the trail is placed once every second, regardless of distance travelled. This update time is changeable from one second to 30 minutes by pressing the key next to the "Time Interval" label. The time shown in this label shows the interval currently selected. Once you press the key next to that label, a new menu appears with time selections. Press the key next to the desired time. The unit returns to the Trail Plotter menu.

Plot Trail - Both Distance and Time

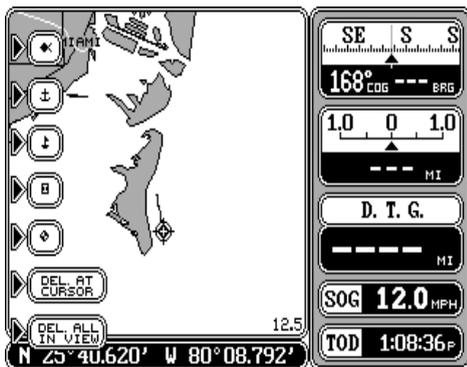
The unit can also update the plot trail using both distance and time. For example, if the time interval is one second and the distance is one-tenth mile, It will place a dot on the trail every second and every tenth-mile travelled.

Plot Trail - Trail Type

The plot trail shown on the display can be changed from a solid line to a dotted line using the "Trail Type" selection on the "Trail Plotter" menu. Simply press the key next to the "Trail Type" to change the trail from a solid line to a dotted line. Press the same key to return to the solid line.

EVENT MARKER

The GlobalMap 2000 can place event markers or "icons" on the plotter to mark fishing spots, shallow water, or other special locations. There are five different icons to choose from. You can place up to 1000 event markers, total. You can erase a single icon or all that you can see on the screen at one time.



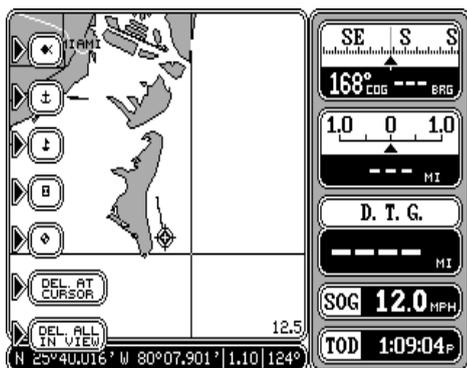
To place an icon, first press the EVENT MARKER key. The screen shown above appears.

Now select one of the five markers shown on the left side of the screen by pressing the key next to the desired marker. As soon as you press the key, the unit places the marker at your present position. This marker always stays in this location. It's saved in memory so it will always show on the display, even if the unit is turned off and on again.

Note: When you place an event marker, first make certain the event markers are on. When the mapping unit is first turned on or after a preset, the markers are automatically turned on. However, if you turn them off (using the “Event Markers On/Off” label on the first “Mapping Setup” menu screen), then the markers won’t show when you place them. The unit places the marker each time you press the key next to the desired marker’s label, however it won’t show until you turn the event markers on.

Using the Event Marker with the Cursor

Normally, when you select a marker, it’s placed on the map at your present position. However, you can place a marker anywhere on the map using the cursor. To do this, first press one of the arrow keys. This makes the map’s cursor lines appear on the display. Now move the lines to the desired position on the display by pressing the arrow keys. When it’s at the desired location, press the EVENT MARKER key, then select an event marker. The unit places the marker at the intersection of the cursor lines. Pressing the EVENT MARKER key twice puts the last used marker at your present position or at the cursor position if it’s displayed. To erase the cursor lines, press the CURSOR key.

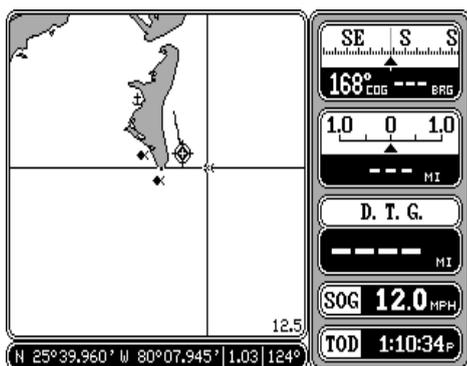


Erasing Event Markers

You can erase event markers one at a time or all of the markers that you can see on the screen with one key press.

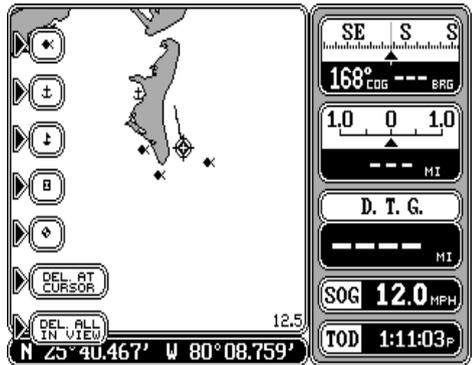
Note: You can’t erase event markers from the display when it’s in the “course-up” mode.

To erase one event marker, press the EVENT MARKER key, then move the cursor to the icon that you wish to erase as shown at right. Now press the key next to the “DEL AT CURSOR” label. This erases the event marker from the



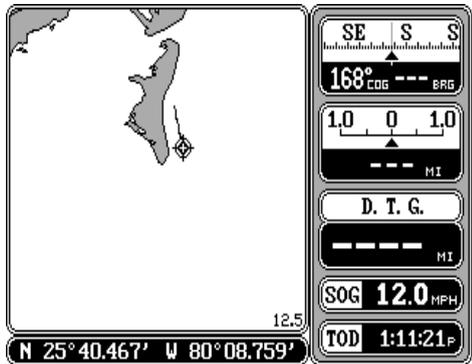
screen. The event marker labels automatically clear from the screen. Press the CURSOR key to erase the cursor lines.

To erase all of the event markers from the screen, first move the cursor to the area that has the event markers that you wish to erase. Of course, if the event markers are in the area of your present position, then you don't need to use the cursor. If necessary, zoom in or zoom out until all of the event markers that you want to erase are shown on the display. Remember, using this function will erase



all of the event markers that are visible on the screen, so if there are event markers showing that you don't want to erase, use the cursor or zoom function to move them off the screen.

Once you have the desired event markers showing that you wish to erase, press the EVENT MARKER key, then press the key next to the "DEL ALL IN VIEW" label. A message appears, warning you that this will erase all of the event markers that are in view. If you want to erase them, press the ENT key. If not, press the CLR key. If you pressed the ENT key, the unit erases all of the event markers from the screen.



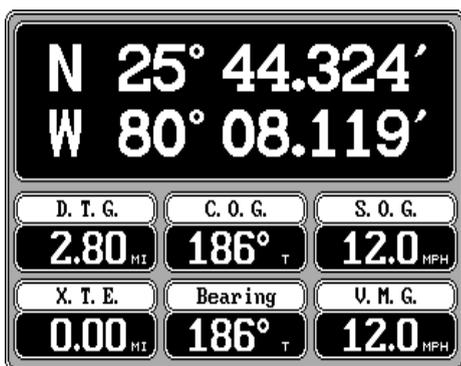
NAVIGATION SCREEN

The navigation screen shows all data in digital numbers. You can view this screen at any time by pressing the NAV key. The navigation display shows your present position in large numbers at the top of the screen and Speed Over Ground (SOG), Course Over Ground (COG), Distance To Go (DTG) to waypoint, Bearing to waypoint, and velocity made good (VMG) beneath the present position.

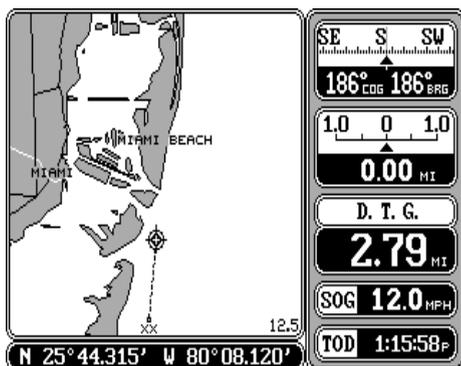
Your present position shows at the top of the screen in latitude/longitude coordinates. This is shown in degrees, minutes, and thousandths of a

minute. For example, on this page, the present position is 25 degrees, 44.324 minutes latitude and 80 degrees, 08.119 minutes longitude.

Please note that you must recall a waypoint to use the Bearing, Distance To Go, and Velocity Made Good displays. See the Waypoint Navigation section for information on recalling a waypoint.



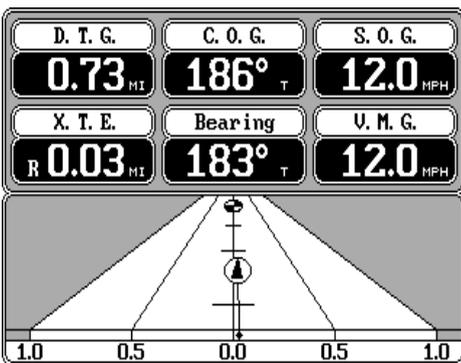
For example, a waypoint was recalled on the map screen at right. The navigation screen at the top of the page shows all of the navigation data from our present position on the map.



Pressing the NAV key at the bottom of the unit while the navigation screen is displayed changes all of the boxes shown at the bottom of the display. Of course, all of these displays can be changed or rearranged by the user in virtually any combination. See the Customize Screens section for more information.

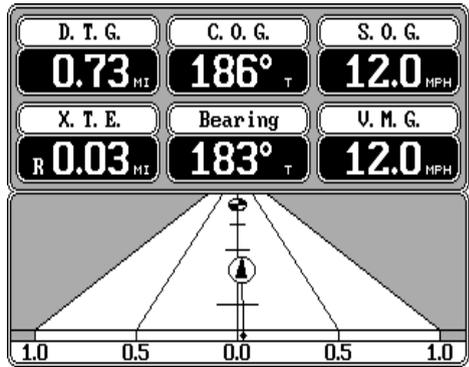
STEERING SCREEN

The steering screen shows a pictorial view of your boat and course travelled. This is called a Course Deviation Indicator or C.D.I. It also shows Distance To Go (DTG), Course Over Ground (COG), Speed Over Ground (SOG), Bearing to Waypoint (Bearing), Cross Track Error (XTE), and Velocity Made Good (VMG). All of the



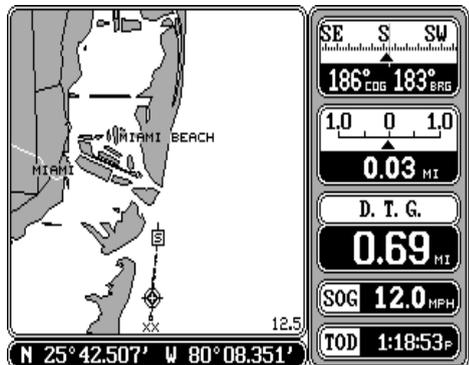
digital boxes on this screen are customizable. Press the STEER key to view this screen.

Your present position is shown by the arrow. The arrow shows the direction the boat is heading relative to the waypoint. In theory, if you steer the boat with the arrow always pointing towards the waypoint, then you will arrive at the waypoint. The solid line extending from the arrow is your track or path you've taken. To travel directly to a waypoint, try to keep the arrow on the center line. The waypoint is depicted by a circle at the top of the CDI display. As you approach the waypoint, the arrow and the box will move closer together. If you travel past the waypoint, the waypoint's box will move to the bottom of the display. Using the digital displays at the bottom of the screen with the graphical display at the top let you accurately steer the boat to a waypoint.



The numbers immediately below the C.D.I. are the C.D.I. range in miles. This gives you an idea of how far off course you are. For example, if the arrow is halfway between the course line and the outside left line and the C.D.I. range is 0.5 miles, then your cross track error is to the left 0.25 miles. The C.D.I. range can be changed from .1 miles to 10 miles.

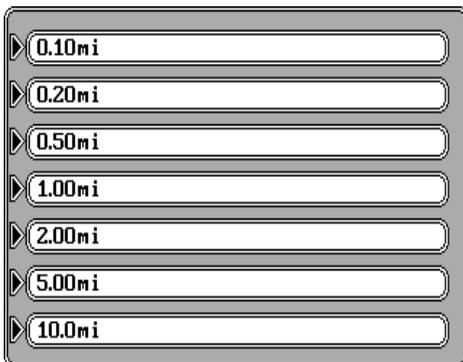
Compare the map screen shown at the bottom of the previous page with the steering screen at the top of that page. The picture of the steer screen and the map screen were taken at the same time. You can see the cross track error, track, distance to waypoint, and the direction you need to steer to the waypoint easily.



C.D.I. Range

To change the C.D.I. range, press the MENU key, then press the key next to the "More" label. Finally, press the key next to the "Steering Range" label. The screen shown at the top of the next page appears. Now press the key next to the desired distance. The unit returns to the steering display with the new C.D.I. range.

A faster way to change the C.D.I. range is to simply press the ZOOM IN or ZOOM OUT keys while the steer screen is displayed. Each time you press one of these keys, the C.D.I. range increases or decreases, depending on which key you press.



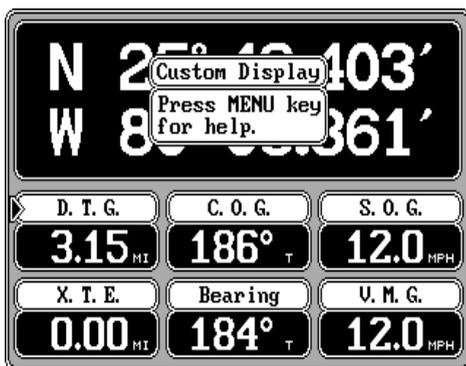
To clear the plot trail on the steering screen, simply press the CLR key.

Pressing the STEER key at the bottom of the unit while the steering screen is displayed changes all of the boxes shown at the top of the display. Again, all of these displays can be changed or rearranged in virtually any combination.

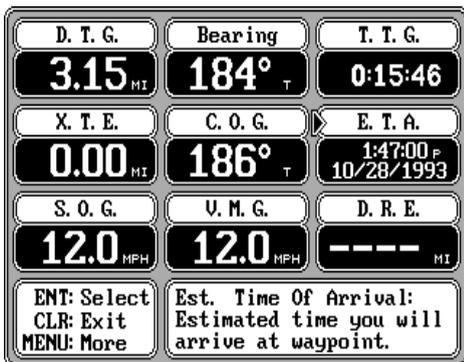
CUSTOMIZE SCREENS

The digital displays on the mapping, navigation, and steering screens, plus the displays on the sonar screen can be changed as desired. To show how this is done, we'll use the Navigation screen as an example.

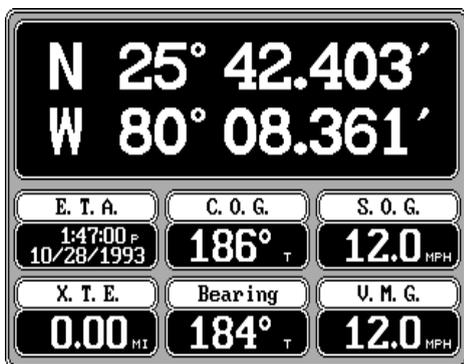
To customize the Navigation screen, first make certain it is showing by pressing the NAV key. Next, press the MENU key two times. Now press the key next to the "Customize Display" label. The unit returns to the Navigation Screen with an arrow pointing to the top left hand corner box as shown below. In this case, the arrow is pointing to the D.T.G. box. The arrow identifies the box as "ready for change." To move the arrow to a different box, simply press the arrow keys until it's pointing to the desired box. In this example, the distance to go (DTG) is changing to the estimated time of arrival (ETA) display. With the arrow pointing to the "DTG" box, press the ENT key. The screen shown at the top of the next page appears. Using the arrow keys, move the arrow to the "E.T.A." box. (If the digital box you want is not on this screen, press the MENU key until you see it.



There are four pages of different digital boxes to choose from. Pressing the MENU key changes to the next page.) Once the arrow is pointing to the desired box, press the ENT key. This returns the unit to the screen you're changing (in this example, it's the navigation screen), and places the new box on the screen as shown above right. Compare the navigation screen on the previous page with the one below right.

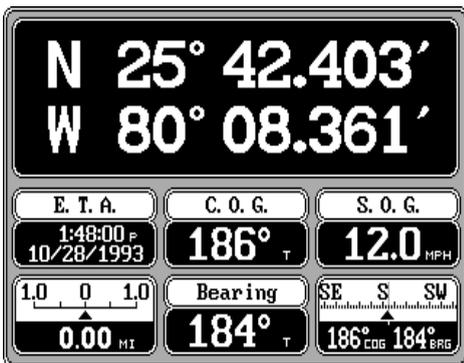


To change another box, simply repeat the above steps. When you're finished customizing the screen, simply press the CLR screen. This erases the arrow from the display and locks in your changes. These changes are held in memory and are saved even if power is turned off.



NAVIGATION SCREEN

Since the Navigation and Steering screens have two different sets of digital boxes available, you can customize each set with different digital boxes, then switch between the screens by simply pressing the appropriate key. For example, customize the navigation screen with one set of digital boxes as shown above. While the navigation screen is showing, press the NAV key. This shows a different set of digital boxes which can also be customized.



NAVIGATION SCREEN

WAYPOINT NAVIGATION

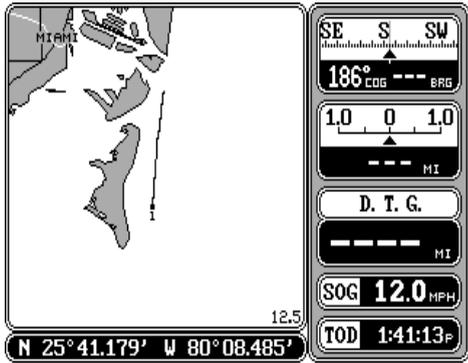
HOW TO SAVE A WAYPOINT

Waypoints are locations on the earth's surface that you wish to go or return to. Waypoints are useful for marking shipwrecks, hot fishing spots, buoys, and other fishing or navigation locations. Storing waypoints makes it easy to return to any point in the world by simply pressing a few buttons. The GlobalMap 2000 can store up to 250 waypoints. You can store your present position or the cursor position as a waypoint or enter latitude/longitude positions as waypoints.

(Quick Save Feature)

You can save your present position as a waypoint with only one key press. This "Quick Save" feature lets you easily save the position of a wreck or other locations.

To save your present position as waypoint, simply press the WAYPTQUICKSAVE key. The first available waypoint number is stored with the present position. The unit displays the waypoint on the map and stores the position in the waypoint list. The number shown on the map is the number assigned to it on the waypoint list. See below for more information on storing waypoints.

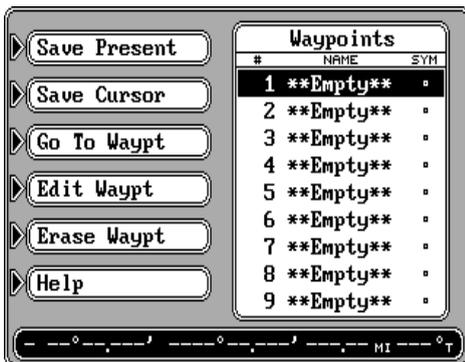


Waypoint Save - View and Save Method

The "Quick Save" feature doesn't let you select the waypoint number. You have to use the next available number when using that method, plus you can only save your present position. The View and Save method gives you far more options. (Note: You can store a position under a waypoint number that already has a position assigned to it using this method.) To save a location as a waypoint, first press the WAYPT/ROUTE key. A new menu appears. Now press the key next to the "Waypoints" label. The screen shown at the top of the next page appears.

The list of waypoints shows on the right side of the screen. The first waypoint number in the list appears at the top of the page. It's highlighted by a black box. This is the number that the position will be stored under. To switch to a different number, simply press the down arrow key. If the

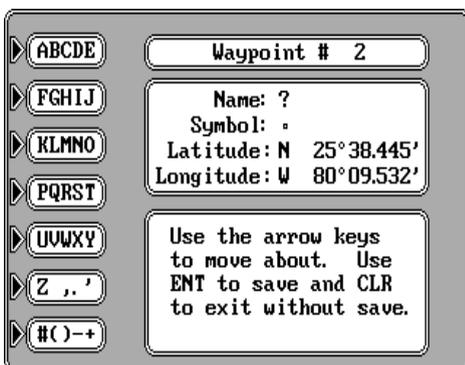
waypoint says “Empty”, then you can store a position there. A row of menu labels appear on the left side of the screen. Pressing a key next to these labels let you save your present position, the cursor position, select a waypoint destination, edit the waypoint elements, and erase a waypoint from the list. The steps required to save a waypoint, either your present position, cursor position, or any other position are the same.



To save a waypoint, first move the black box to the waypoint number you wish to save the location in by using the up or down cursor keys. Now simply press the key next to the “Save Present” label to save your present position. To save the position at the cursor cross marks, press the key next to the “Save Cursor”. If you wish to enter a location other than these, press the key next to the “Edit Waypt” label. You can also change anything on an existing saved waypoint by using the “Edit Waypt” label.

Editing a Waypoint

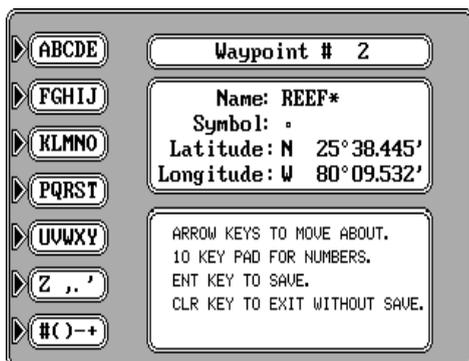
After you’ve pressed the key next to the “Save Present”, “Save Cursor”, or “Edit Waypt” labels, a new screen appears as shown at right. The position at the time you pressed the “Save Present” or “Save Cursor” label is shown in the box in the middle of the screen. (No position shows if you pressed the “Edit Waypt” key on an empty waypoint.) The waypoint



number you are currently editing shows at the top of the screen. A question mark flashes in the “Name” field. If you wish to name this waypoint, enter the letters of the name using the keys on the left side of the screen. For example, to enter the name “REEF”, first press the CURSOR key until the letter “R” appears. Now press the right arrow key once to move to the next location. Press the ZOOM IN key until the “E” appears. Continue in this manner until the waypoint name is completed as shown at the top of the next page. Press the ENT key when you’re finished.

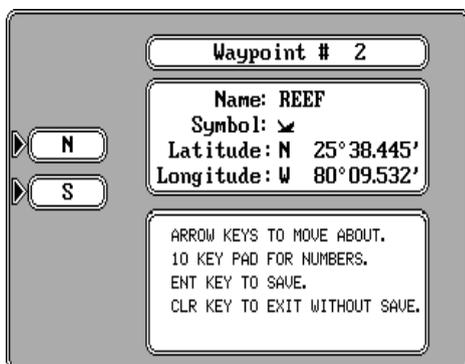
Waypoint Symbols

If you want a symbol placed on the map, press the down arrow key to the "Symbol" location on the waypoint screen. The letters on the left side of the screen disappear and symbols appear in the labels. (See below) Press the key next to the desired symbol to assign it to the waypoint number shown at the top of the screen. There are 28 different symbols available.



Enter Latitude/Longitude

If there is no latitude/longitude position showing, or if you wish to change the position shown on the waypoint screen, press the down arrow key until the first number starts flashing in the latitude field. Now enter the desired latitude. If you need to change the latitude from north to south, press the key next to the "S" label. After you've made the desired changes to the latitude, press the down arrow key to move to the longitude. Now enter the new longitude. Press the key next to the "E" or "W" if you need to change the longitude from west to east or vice-versa. Anytime you make a mistake entering a number, simply press the left or right arrow keys to move to the number you wish to change, then enter the correct one.

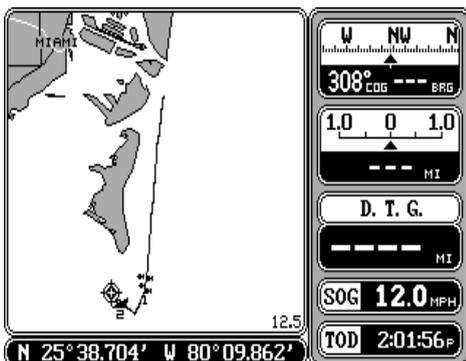


Once everything on this screen is correct, press the ENT key. The unit returns to the mapping screen as shown at the top of the next page. If the waypoint location is within the area shown on the map, a box appears on the map with the waypoint's number beneath it. If a symbol was assigned

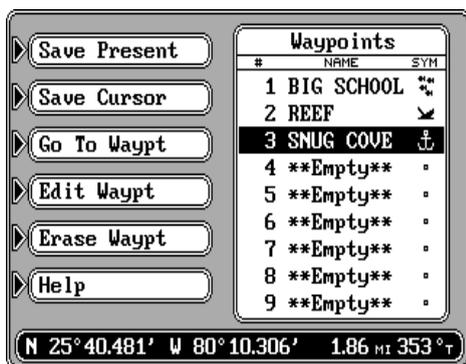
to the waypoint, the symbol will show on the screen instead of the box.

Navigate to a Waypoint

To show navigation data to a waypoint location, first press the WAYPT/ROUTE key, then press the key next to the "Waypoints" label. The screen shown below appears. Select the waypoint by pressing the up or down arrow keys until the desired waypoint is highlighted by the black box. The waypoint's position, distance from your present position, and bearing from your position to the waypoint show at the bottom of the screen. Now simply press the key next to the "Go To Waypt" label. The GlobalMap 2000 returns to the mapping screen. It draws a "S" with a box around it showing your position when you recalled the waypoint. (See the screen below.)

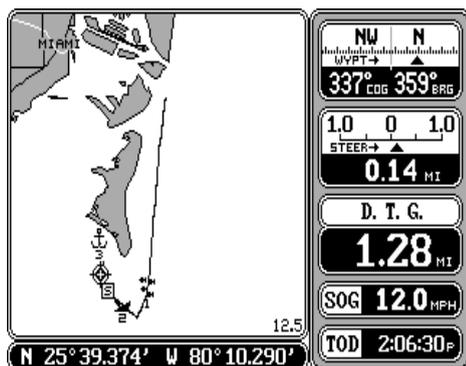


A dotted line extends from this box to the recalled waypoint. This line is the shortest path to the waypoint. If you steer the boat along this line, you'll travel directly to the recalled waypoint. Navigation data also appears in all digital displays which show your course over ground (COG), speed over ground (SOG), distance to waypoint (DTG) and much more. Switch to the navigation or steering screens for more navigation information.



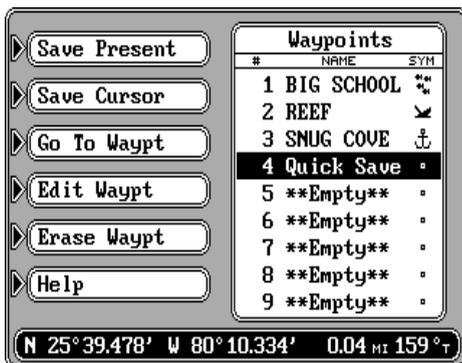
Cancel Navigation

To stop the GlobalMap 2000 from showing navigation data to a waypoint, first press the WAYPT/ROUTE key, then press the key next to the "Cancel Navigation" label. The unit returns to the last-used map, navigation, or steering screen.



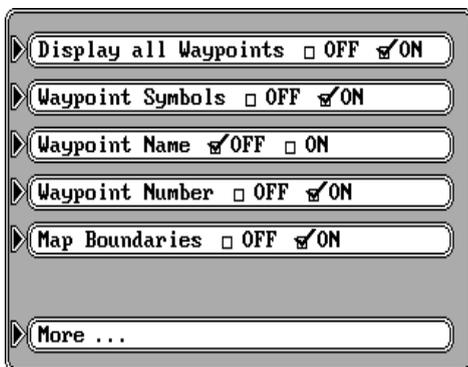
Erase a Waypoint

To delete a waypoint from the waypoint list, first press the WAYPT/ROUTE key, then press the key next to the “Waypoints” label. The screen shown at right appears. Now move the black box to the waypoint that you wish to erase using the arrow keys. Now simply press the key next to the “Erase Waypt” label. A message appears on the screen that warns you that this waypoint will be permanently erased. If you still wish to erase this waypoint, press the ENT key. The waypoint location will return to “Empty”. Press the CLR key to return to the map, steer, or navigation screen.



WAYPOINT DISPLAY

There are a number of options available when showing the waypoint location on the map. You can show all waypoints or turn them off, show only the symbols, names, or number, or any combination of these.



To change the waypoint display, first press the MENU key, then press the key next to the “Mapping Setup” label. Now press the key next to the

“More...” label. The screen shown at the bottom of the previous page appears. Press the key next to the desired option, then press the CLR key to exit this screen.

The defaults for this screen are: all waypoints on, waypoint symbols on, waypoint names off, and waypoint numbers on.

ROUTES

A route gives you the ability to navigate to several waypoints without having to reprogram the unit after arriving at each one. A route consists of two or more waypoints. When you travel on a route, the GlobalMap 2000 shows navigation information to the first waypoint in the route. When you reach the first waypoint, (signalled by the Arrival Alarm), the unit automatically

sequences to the next waypoint. Navigation information is shown to this waypoint and the process repeats. When you reach the last waypoint in a route, the arrival alarm sounds until you turn it off.

There are four steps required to create and follow a route. First, you must create and name the route. Next, select the waypoints used in the route. Then determine the starting waypoint. Next, tell the unit to follow the route. Finally, the unit will ask you if you wish to run the route forward or backward. After these steps are completed, the mapping unit will start showing navigation data to the first waypoint on the route.

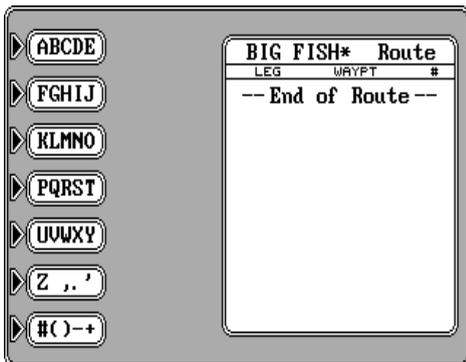
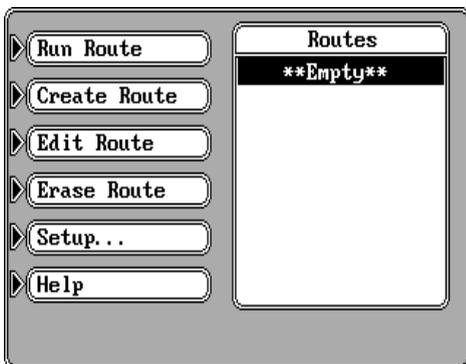
You can create a route from the list of waypoints or directly from the map.

CREATING A ROUTE

Name a Route

To create a route, first press the WAYPT/ROUTE key. Next, press the key next to the "Routes" label. The screen shown below appears.

This menu lets you create a route, edit an existing route, run a route, erase it, and set the auto-sequencing and arrival radius. To create the route, press the key next to the "Create Route" label. The screen shown at right appears. This is the "name route" menu. Press a key next to the label that has the desired letter repeatedly until the first letter in the route name appears. Now press the right arrow key once. Select the next letter in the route name, then press the right arrow key again. Continue in this manner until the route name has been entered. (Note: To enter a space, press the key next to the "Z ,,'" label. The space is the character after the "Z".) When the name appears as you wish, press the ENT key. The screen at the top of the next page appears.



Waypoint Selection

You're now ready to place the waypoints into the route, using any of three different methods. You can place waypoints using the cursor on the map, from the list of waypoints, or enter the latitude/longitude of each waypoint from the keyboard.



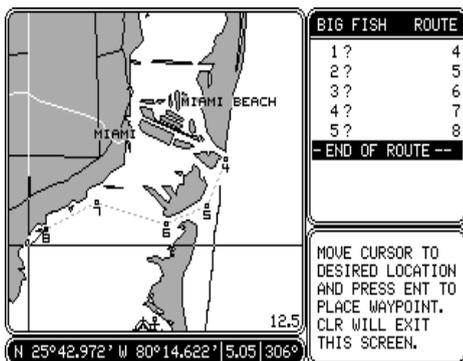
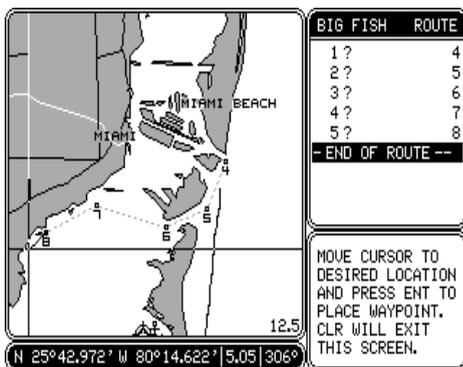
IMPORTANT!

You must select waypoints in the order they are to be used in the route. In other words, suppose you want a route that consists of waypoint numbers 1, 3, and 5. However, you wish to travel to 3 first, then 1, and finally 5. In this case, you must select waypoint 3, 1, and 5 in that order when making the route.

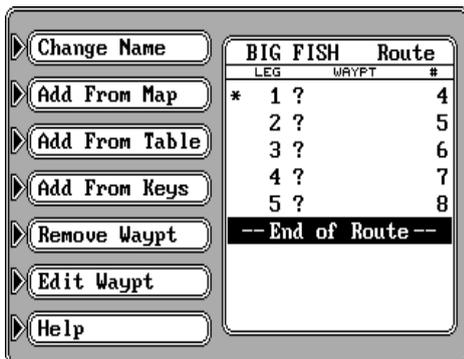
Add From Map

To create a route using the cursor on the map, press the key next to the "Add From Map" label. A screen similar to the one at right appears.

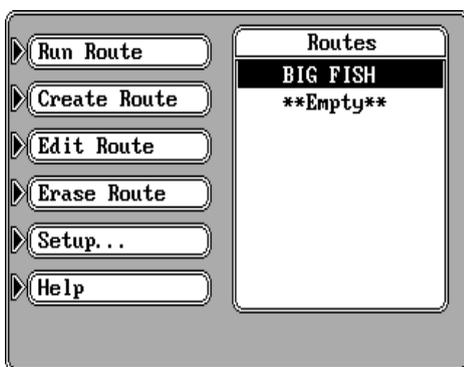
To save the first waypoint location in the route, simply press the arrow keys to move the cursor to the desired location. The latitude/longitude of the cursor shows at the bottom of the screen. When the cursor is at the desired location, press the ENT key. This saves the cursor position as a waypoint. A box appears on the screen with the waypoint's number beneath it. Now move the cursor to the next location on the route. As you move the cursor, a line stretches from the first waypoint to the cursor position. When the cursor is at the desired location, press the ENT



key again. A dashed line extends from the first waypoint to the second, showing the first leg of the route. Continue moving the cursor and saving waypoints until all of the waypoints in the route have been selected. Press the CLR key when you're finished. A screen similar to the one at right appears.



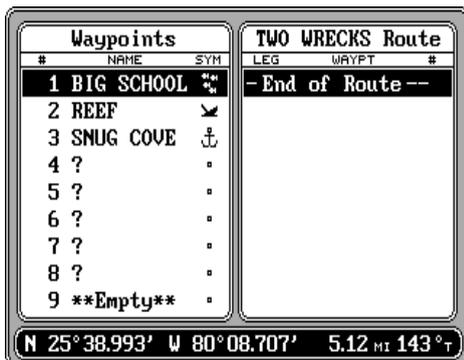
The waypoints used in this route appear on the right side of the screen. In this example route, we saved five waypoints, so there are five "legs" on the route. Question marks appear for the name on all of the waypoints, since you can't name the waypoints while entering them from the map. If you wish to change anything about the waypoint, i.e. name, position, or icon, see the "Edit Waypoint" section. The waypoint's number appears on the far right side of the screen.



This is its number in the waypoint list. All of the waypoints that are saved are added to the waypoint list, no matter how you save them. If the route shown on the list is the way you want it, simply press the ENT key to save it. The unit returns to the route menu with your new route at the top of the list as shown above.

Add From Table

To create a route from the list of waypoints, first name the route as shown previously. You should see the screen at right after naming the route. Now press the key next to the "Add From Table" label. The screen shown at the top of the next page appears.



All of the waypoints (including their number, name, and symbol) can be viewed on the left side of the screen. The first nine are shown. To see more waypoints, simply press the down arrow key. The position of the highlighted waypoint is shown at the bottom of the screen. Bearing and distance from your present position to the waypoint are shown next to the waypoint's latitude/longitude.

Waypoints			TWO WRECKS Route		
#	NAME	SYM	LEG	WAYPT	#
1	BIG SCHOOL	**	1	BIG SCHOOL	1
2	REEF	⚓	2	?	5
3	SNUG COVE	⚓	3	?	7
4	?	.	4	SNUG COVE	3
5	?	.	-- End of Route --		
6	?	.			
7	?	.			
8	?	.			
9	**Empty**	.			

N 25°45.684' W 80°07.941' 5.21 MI 48°T

The route name is shown at the top right-hand side of the display. Beneath it is the list of waypoints used in the route. Of course, if you just created the route, the list will be empty.

Change Name	<table border="1"> <thead> <tr> <th colspan="3">TWO WRECKS Route</th> </tr> <tr> <th>LEG</th> <th>WAYPT</th> <th>#</th> </tr> </thead> <tbody> <tr> <td>*</td> <td>1 BIG SCHOOL</td> <td>1</td> </tr> <tr> <td></td> <td>2 ?</td> <td>5</td> </tr> <tr> <td></td> <td>3 ?</td> <td>7</td> </tr> <tr> <td></td> <td>4 SNUG COVE</td> <td>3</td> </tr> <tr style="background-color: black; color: white;"> <td colspan="3" style="text-align: center;">-- End of Route --</td> </tr> <tr> <td colspan="3"></td> </tr> </tbody> </table>	TWO WRECKS Route			LEG	WAYPT	#	*	1 BIG SCHOOL	1		2 ?	5		3 ?	7		4 SNUG COVE	3	-- End of Route --					
TWO WRECKS Route																									
LEG		WAYPT	#																						
*		1 BIG SCHOOL	1																						
		2 ?	5																						
		3 ?	7																						
		4 SNUG COVE	3																						
-- End of Route --																									
Add From Map																									
Add From Table																									
Add From Keys																									
Remove Waypt																									
Edit Waypt																									
Help																									

To add a waypoint to the route, press the down arrow key until the black box surrounds the first waypoint that you wish to add to the list, then press the ENT key. The waypoint shows at the top of the list under the route name on the right side of the screen. When all of the waypoints have been added to the route, press the CLR key. This returns you to the edit route menu as shown above. If the route shown on this screen is the way you want it, press the ENT key to save it. The unit returns to the route menu with your route shown on the list.

Add From Keys

You can enter each waypoint in the route directly from the keyboard. In other words, you enter the latitude/longitude of each waypoint in the route. This method also lets you choose the waypoint name, number, and symbol.

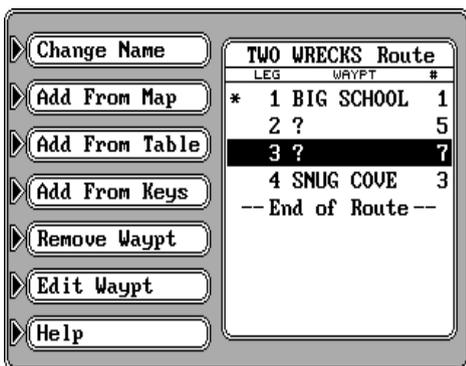
To add waypoints to a route from the keyboard, first name a route as shown earlier. Next, press the key adjacent to the "Add From Keys" label. The screen shown at the top of the next page appears. Use the arrow keys to move between fields. Enter the waypoint name, symbol, and position, then

press the ENT key to save the waypoint and return to the route edit screen.

Remove Waypoint

To erase a waypoint from the list of waypoints used in a route, first recall the route by pressing the WAYPT/ROUTE key, then pressing the key next to the “Routes” label. Use the arrow keys to highlight the route you want to change. Now press the key next to the “Edit Route” label. The screen shown at right appears.

Move the black box to the waypoint you want to erase. Now press the key next to the “Remove Waypt” label. The waypoint is removed from the list. Press the ENT key to save your changes.



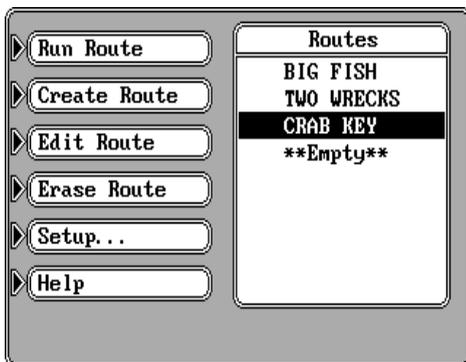
Edit Waypoint

After a waypoint has been added to a route, any of the elements of that waypoint can be changed. To do this, first press the arrow keys to move the black box to the waypoint that you wish to change. Next, press the key adjacent to the “Edit Waypt” label on the “Edit Route” menu shown above. The “Edit Waypt” screen is identical to both the waypoint entry and the “Add from Keys” screens. It lets you change the waypoint’s name, symbol, and location. After making the desired changes, press the ENT key to save them. The unit returns to the “Edit Route” screen shown above.

Note: If an asterisk * appears next to a waypoint in the list of waypoints used in a route, then that waypoint has changed since it was added to a route. For example, if you use waypoint number one in a route and later change the waypoint’s location, then the GlobalMap 2000 will place an asterisk next to the waypoint’s number in the route list. This alerts you to any change made to any waypoint used in a route, including name, symbol, and position.

Erase Route

To erase a route from the list, first press the WAYPT/ROUTE key, then press the key next to the “Routes” label. Use the arrow keys to highlight the route you want to remove from the list as shown at right. Now press the key next to the “Erase Route” label. A warning message appears, telling you this route will be permanently erased from memory. Press the ENT key to erase the route, the CLR key to cancel.

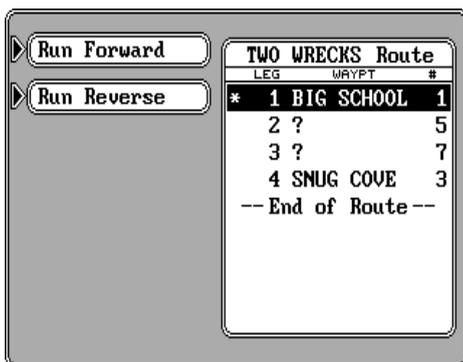


A new message appears, asking if you want to erase the waypoints used in the route from the waypoint list. If you press the ENT key, all of the waypoints used in this route will be erased from the waypoint list. If you want to keep the waypoints, simply press the CLR key. The route is erased from the list after the ENT or CLR key is pressed.

FOLLOW A ROUTE

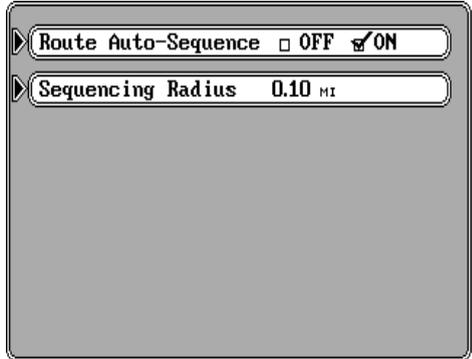
To follow a route, first press the WAYPT/ROUTE key, then press the key next to the “Routes” label. The screen shown above appears. Now move the black box to the desired route using the arrow keys, then press the key next to the “Run Route” label. The screen shown below appears.

The list of waypoints used in the route shows on the right side of the screen. The black box surrounds the first waypoint in the list. This means the first waypoint on the list will be the first waypoint used in the route. If you want to travel to a different waypoint in the route first, move the black box to the desired waypoint using the arrow keys. Now press the key next to the “Run Forward” or “Run Reverse” labels. To run forward through the route means you travel to the first waypoint in the list first, then all of the others. To run backward through the route means you start at the last waypoint in the list and move backward through the list of waypoints. For example, suppose you have three waypoints in a route and they’re numbered 3, 6, and 2. If you travel forward through the route, the unit will show navigation data to way-

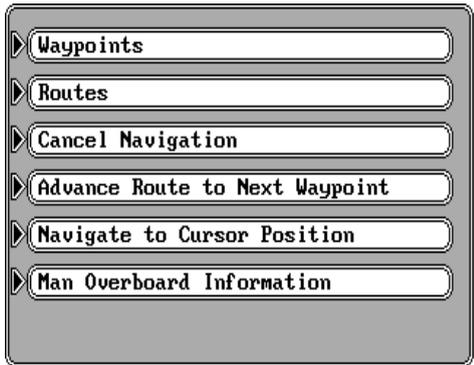


point number 3 first, then 6, and finally 2. If you travel backward through the route, the unit will start with waypoint number 2 first, then 6, and end with waypoint number 3. No matter if you travel forward or reverse through the route, when you reach the last waypoint in the route, the arrival alarm sounds until you turn it off.

After you decide which direction to run the route, a new menu appears as shown at right. This is the auto-sequencing menu. With auto-sequencing turned on (the default), the unit shows navigation data to the first waypoint in the route until you come within 0.10 mile of the waypoint. This distance is the sequencing radius. As soon as this happens, the unit sounds a tone, letting you know that you are within 0.10 mile of the waypoint's location. It then automatically switches to the next waypoint in the route, showing navigation to the second waypoint location. This process repeats until the route is completed. When you arrive at the last waypoint in the route, a tone sounds continuously until you turn it off.



If you turn auto-sequencing off, the unit won't automatically switch to the next waypoint after arriving at a waypoint. Instead, once you arrive at a waypoint, you'll need to press the WAYPT/ROUTE key, then press the key next to the "Advance Route to Next Waypoint" label as shown on the screen at right.



To change the sequencing radius, (distance from the waypoint that will signal the sequence tone and change to the next waypoint in a route) press the key next to the "Sequencing Radius" label. Now enter the desired radius using the numbered keys. Press the ENT key when you're finished or the CLR key to exit without changing the radius.

The auto-sequencing menu can also be found by first pressing the

WAYPT/ROUTE key, then the key next to the “Routes” label. Finally, press the key next to the “Setup...” label. The auto-sequencing menu shown at the top of the previous page appears.

NAVIGATION ALARMS

The GlobalMap 2000 has four alarms. One is an arrival alarm that sounds when you come within a preset distance to a waypoint. Another is a cross track error alarm that sounds when you move off course more than the alarm’s setting. The anchor alarm sounds when you move outside a preset radius. The last alarm is called the perpendicular alarm. This alarm sounds when you cross an imaginary line perpendicular to your course that passes through the waypoint. All of these alarms are set identically except the perpendicular alarm which has no adjustment.

To adjust an alarm, first press the MENU key. Now press the key next to the “Navigation Alarms” label. The screen shown at right appears. This screen is divided into two parts. The top half lets you turn an alarm on or off. The bottom half lets you adjust the arrival, cross track error, and anchor radius alarms. The default for all alarms is “off.” To turn an alarm on, simply press the key next to the alarm’s label. This moves the check mark from the “off” box to the “on” box. After you’ve turned the alarm on, simply press the CLR key to exit this screen.

The screenshot shows a menu with six items, each in a rectangular box with a left-pointing arrow and a right-pointing arrow. The first four items are alarm status indicators, and the last three are numerical settings.

- Arrival Alarm ON OFF
- XTE Alarm ON OFF
- Anchor Alarm ON OFF
- Perpendicular Alarm ON OFF
- Arrival Radius: 0.10 mi
- XTE Range: 0.10 mi
- Anchor Radius: 0.10 mi

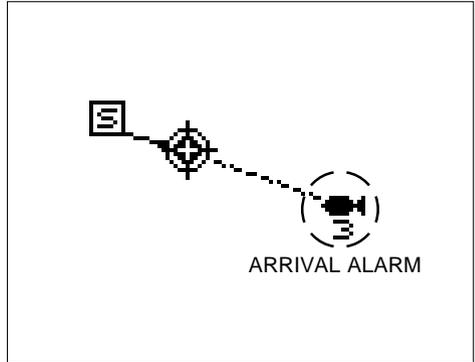
Adjusting an Alarm

If you need to adjust the alarm’s settings, simply press the key next to the alarm’s label at the bottom of the screen, then enter the change using the numbered keys. For example, to change the arrival radius from 0.10 to 0.25 mile, first press the key next to the “Arrival Radius” label. Now enter the following numbers: 0 2 0. Press the ENT key when you’re finished. The arrival radius will read 0.20 mi. You can press the left or right arrow keys to move between the numbers or the CLR key to exit without making a change while editing the alarm setting. Press the CLR key to exit this screen.

ARRIVAL ALARM

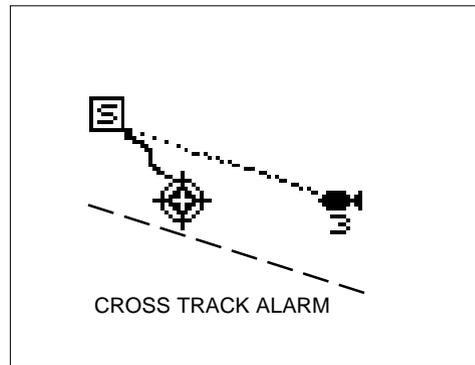
The arrival alarm sounds a tone when your position is within the alarm’s radius of a waypoint. For example, the alarm sounds if you come within .1

mile of a recalled waypoint if the arrival alarm's setting is .1 mile. We've drawn the imaginary arrival alarm radius on the screen at right. As you can see, the present position symbol hasn't reached the circle. When it does, the arrival alarm will sound. The alarm is adjustable from .010 to 9.99 miles.



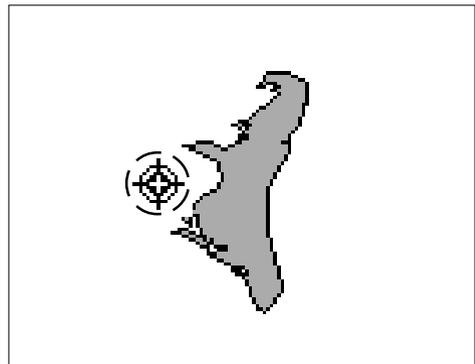
XTE ALARM

The XTE (cross track error) alarm sounds a tone when your cross track error is greater than the alarm's setting. As shown on the map at right, the boat's cross track error is 3/4 mile. If the XTE alarm is set to 1 mile, the alarm sounds, (shown by an imaginary line on the screen at right) letting you know how far off course your present position is. This alarm is adjustable from .010 to 9.99 miles.



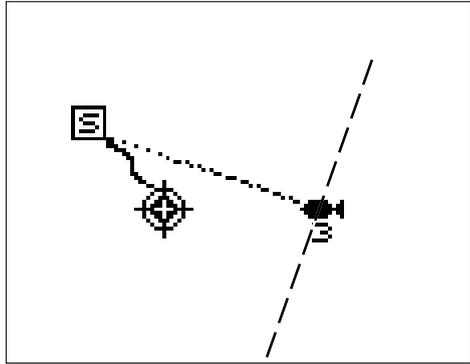
ANCHOR ALARM

The anchor alarm sounds a tone when the present position moves outside a preset radius. For example, if you set the anchor alarm to .1 nautical mile (600 feet), then the alarm will sound if you move more than 600 feet from the location where you set the alarm. It's adjustable from 0.01 to 9.9 miles. On the map at the bottom of the previous page, the anchor alarm is set to .5 miles. If the boat moves outside the .5 mile circle, the anchor alarm sounds a tone.



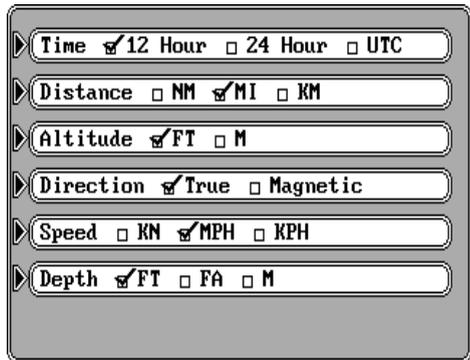
PERPENDICULAR ALARM

The perpendicular alarm sounds when your course is even with a waypoint and is starting to pass it. The perpendicular alarm has no adjustment. It doesn't care how far from a recalled waypoint you are; it sounds only when you're passing the recalled waypoint. For example, on the map above, the waypoint is perpendicular to the present position's course. In this example, as soon as the present position crosses the imaginary dashed line, the perpendicular alarm will be "tripped" and sound an alarm.



UNITS OF MEASURE

The units of measure are adjustable. This includes time, distance, altitude, direction, speed, depth, and temperature. To change any of the settings, first press the MENU key two times. Now press the key next to the "Units of Measure" label. The screen shown at right appears. Simply press the key next to the label that you wish to change until the check mark in that label moves to the desired setting. Press the CLR key to exit this screen and return to a mapping or navigation screen.



Time can be shown on the screen as 12 hour (A.M. - P.M.), 24 hour (2:00 P.M.= 1400 hours), or UTC time. Normally, the unit shows your local time in 12 hour format, but you can also display UTC time (which is the time at Greenwich, England). Distance can be shown in nautical miles (NM), statute miles (MI), or kilometers (KM). Altitude can show in either feet or meters.

Direction (True and Magnetic Position)

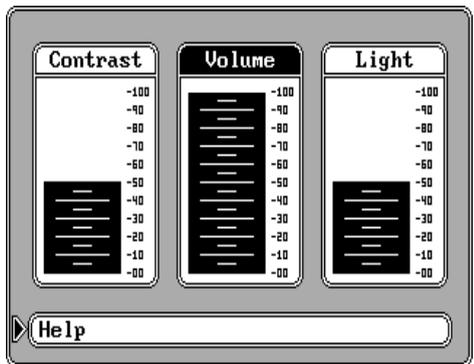
True north is the top of the world. It's where all lines of longitude converge. Magnetic north is the location our compasses point. It lies several hundred miles to the south of true north, at a location in Canada.

The GlobalMap 2000 can display navigation information in magnetic or true. When it's turned on for the first time true is used. Press the key next to the "Direction" label to switch it to magnetic.

Speed can show in knots (KN), statute miles per hour (M.P.H.), or kilometers per hour (K.P.H.). The default setting for speed is statute miles per hour. Water depth readings shown on the C-MAP charts and on the sonar can be shown in feet (FT), fathoms (FA), or meters (M). Water temperature readings can show in degrees Fahrenheit (°F) or degrees Celsius (°C).

CONTRAST , VOLUME, and LIGHT ADJUST

The display contrast, speaker volume, and light brightness are adjustable from the same menu screen. To adjust any or all of these features, press the MENU key two times, then press the key next to the "Contrast, Volume, and Brightness" label. The screen shown at right appears. Three vertical bar graphs appear on this screen. When you first enter this screen, the contrast is ready for adjustment. To change another feature on this screen, simply press the left or right arrow key to highlight the desired feature. Then press the up or down arrow keys to increase or decrease the level. When you have everything on this page adjusted as desired, press the CLR key to exit.



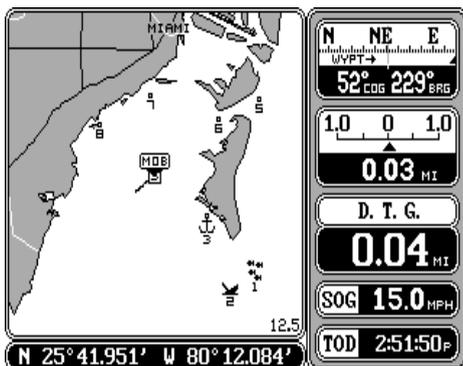
Note: To turn the lights on, simply press the ON key again after turning the unit on. To turn the lights off, press the ON key again.

MAN OVERBOARD

One of boating's most terrifying events is having a friend or family member fall overboard. This situation can be deadly on any body of water, fresh or salt. It's particularly dangerous at night or if you're out of sight of land. Of course, the first thing to do is remain calm and try all standard safety measures to try and rescue the person. If you lose sight of the person, you can use the GlobalMap 2000 to help start a search pattern.

Once you're back at the helm after initial rescue efforts have failed, press the MAN OVERBOARD key. A message appears: "Now Navigating to Man

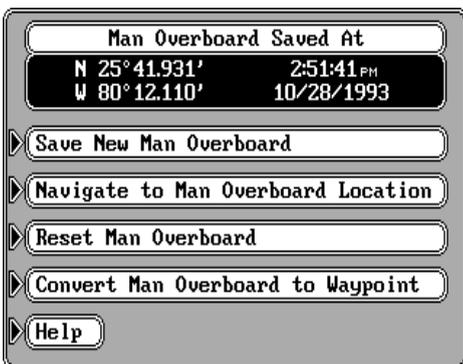
Overboard Location". A screen similar to the one at right appears. Your position at the time you pressed the Man Overboard key is shown by a box with the letters "MOB" inside. All digital navigation displays including Distance (DTG), Bearing (BRG), Course (COG), Speed Over Ground (SOG), and Time To Go (TTG) show data that let you navigate back to the man overboard position.



Man Overboard Information

Once you've saved a Man Overboard position, the unit shows navigation data to that position until you reset the Man Overboard function, turn the unit off, or use the Cancel Navigation feature.

To reset the Man Overboard or view more information about it, press the WAYPT/ROUTE key. Now press the key next to the "Man Overboard Information" label. The screen shown at right appears.



Your position, time, and date when the Man Overboard key was pressed shows at the top of the screen. If you wish to save your present position instead of the one shown at the top of the screen, press the key next to the "Save New Man Overboard" label. If you're not currently navigating to the Man Overboard position and wish to do so, press the key next to the "Navigate to Man Overboard Location" label. The GlobalMap 2000 will instantly show navigation data to the position shown at the top of this screen.

Once the Man Overboard key is pressed, your present position is saved in memory. Pressing the key again won't save your position again, instead a warning message will appear. This prevents the inadvertent loss of the current Man Overboard position by someone accidentally pressing the Man Overboard key. To reset the Man Overboard function which "arms" the

key, press the key next to the “Reset Man Overboard” label on the menu shown above.

The GlobalMap 2000 doesn't save the Man Overboard position in the waypoint table. However, it does save the position on the Man Overboard Information screen.

To add the position shown at the top of Man Overboard Information menu to the waypoint table, simply press the key next to the “Covert Man Overboard to Waypoint” label. The unit assigns that position to the first available waypoint number in the waypoint table. This waypoint can be edited the same as any other waypoint on the list, including the name, symbol, and position.

Remember, repeated pressing of the Man Overboard key does not repeatedly save your present position! The unit only saves the position the first time the Man Overboard key is pressed. To save a new Man Overboard position, you must first reset Man Overboard by pressing the key next to the “Reset Man Overboard” label on the Man Overboard Information menu.

You can navigate to a waypoint using the Waypoint Recall feature at any time, however this stops the GlobalMap 2000 from navigating to the Man Overboard position.

Remember, saving the victim is the primary goal. Try all options to rescue the person immediately after the accident happens. Training and education are also good accident preventative. The Coast Guard has excellent safety courses. Instruct all members on board your boat on safety procedures before leaving the dock. Make certain all on board know what to do before any emergency occurs.

DATUMS

The GPS navigation system relies on complex mathematical calculations to determine your position based on satellite data and other factors. One factor is the Earth's shape. Since the Earth is not a true sphere, variations in the calculations have to be made to accommodate deviations. To make matters more complex, not everyone uses the same data to determine what the deviations are. The size and shape of the ellipsoids that are used to approximate the earth's surface are improved often. This can lead to errors if your navigation device uses one ellipsoid, while your chart uses a different one. The term used for these ellipsoids is “Datum.”

To reduce the error factor between datum, this unit gives you the capability to select the datum used by the unit when displaying the map. You can select a new datum from a list or enter a correction offset based on latitude/longitude.

To change the datum, first press the MENU key three times. Now press the key next to the "Datum Translations" label. The screen shown below appears.

There are two boxes on the left side of the screen. One reads "Source Datum", the other is "Display Datum." Before changing the Datum, you need to know which datum the navigation receiver supplying position data to the GlobalMap 2000 is using. For example, all Lowrance GPS receivers (including the LGC-1 GPS module) use WGS 84; all Lowrance Loran-C receivers use WGS 72.



The display datum box shows the datum currently displayed on the mapping screen by the GlobalMap 2000. If the display datum is different from the source datum, the GlobalMap 2000 "translates" the source datum to the displayed one. This lets you display a map using any datum on the list on the right side of the screen.

To change either the source or displayed datum, first press the key on the right side of the screen next to the desired box that you wish to change. Then press the up or down arrow keys to move highlight the datum you wish to use. For example, to change the source datum from WGS 84 to WGS 72, simply press the key next to the "Source Datum" label, then press the down arrow key until "WGS 72" is highlighted. When the source box shows the correct datum, press the ENT key. This saves the datum displayed in the source box.

Once you have the desired datums showing in both the source and the display boxes, press the CLR key. This unit returns to the mapping screen, using the datums you specified.

The default for both the source and display datums is WGS 84.

PCF (Position Correction Factor)

Another method used to reduce the error factor between datum 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 the one on the chart. The unit will add this offset or PCF to all position 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 this feature should only be used if your map indicates what the possible error is. This feature should always be reset to zero (0) when finished with that 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 .010 degrees less than the one on the chart. Using the Position Correction Factor (PCF) Offset feature, you make the unit read the same as the chart. If you move, the unit will continuously add the change to all position 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. This offset is saved in memory. It doesn't change when the unit is turned off. However, a Preset does erase the PCF factor.

To set the PCF factor, first press the MENU key three times, then press the key next to the “Datum Translations” label. Finally, press the key next to the “PCF” label at the bottom of the display. The screen shown at right appears.

Position Correction Factor

Lat. Offset: N 0°00.012'
Lon. Offset: E 0°00.068'

▶ Toggle N/S Latitude

▶ Toggle E/W Longitude

▶ PCF Mode ON OFF

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 have entered 0 degrees, .012 minutes north latitude and 0 degrees, .068 minutes east longitude as the PCF offset. That is the difference between the present position shown on the unit and our position shown by the chart. In other words, our position shown on the unit is 0.012 minutes south and 0.068 minutes west of the position shown on the chart.

After you've entered the desired offset, press the key next to the “PCF Mode ON OFF” label. This turns the PCF correction factor that you entered

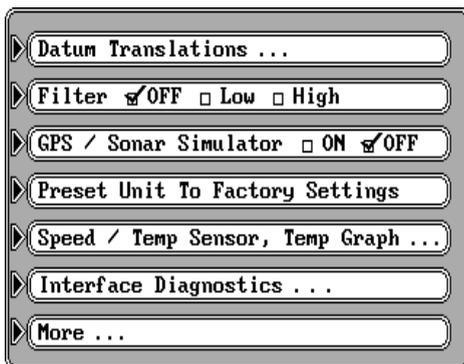
on. To leave this screen, press the CLR key. This also puts your changes into effect.

To turn these changes off, return to this screen and press the key next to the “PCF Mode ON OFF” label. Remember, presetting the unit also erases any PCF offset, thereby turning it off.

POSITION FILTER

No matter what kind of radio navigation input you’re using with this mapping unit, “jitter” or small position changes will show on the display even when you’re not moving. For example, if the GPS module or antenna is mounted high above the deck, position changes will occur as the boat rolls in the waves. The position filter will average the jitter, showing a smoother position and navigation display.

(The jitter affects not only the position, but all other displays including course over ground and speed over ground.) There are three settings: off, low, and high. When the unit is first turned on or is preset, the filter is turned off. To set the filter, press the MENU key three times. The screen shown above appears. Now press the key next to the “Filter” label until the check mark is on the desired setting. Press the CLR key to exit this screen and put your change into effect.



SIMULATOR

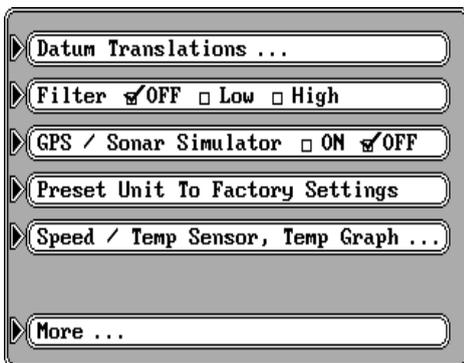
The GlobalMap 2000 has a GPS and sonar simulator feature that shows your present position travelling a preset course from Miami, Florida. All navigation and sonar features of the unit operate, also. A recurring message appears alerting you that the simulator mode is enabled. **DON'T USE THIS UNIT FOR NAVIGATION WHEN THE SIMULATOR IS OPERATING!**

To turn the simulator on, press the MENU key three times. Now press the key next to the “GPS / Sonar Simulator” label. The screen clears and the simulator begins operation. To turn the simulator off, either repeat the above steps or turn the unit off.

PRESET

The preset feature returns all of the GlobalMap's settings to their original factory settings for both GPS and sonar. This resets the units of measure, speaker volume, display contrast, and more. However, this doesn't erase any event markers, waypoints or routes.

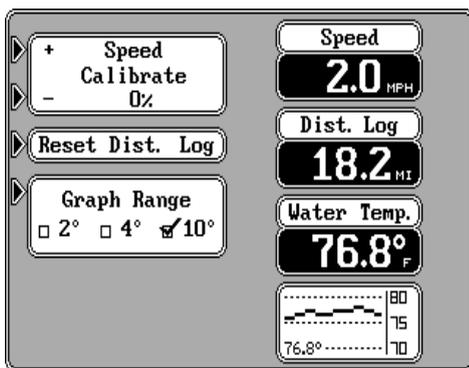
To preset the unit, press the MENU key three times. The screen shown above appears. Now press the key next to the "Preset Unit to Factory Settings" label. A message appears, warning you that this will preset the unit. Press the ENT to preset the unit or the CLR key to exit without presetting. If you press the ENT key, the menu screen disappears and the unit returns to the mapping screen. All features return to their factory settings.



SPEED / TEMPERATURE/LOG SELECTION AND CALIBRATION

When a sonar module with speed and temperature capabilities (such as the SAM-ST) is connected to the GlobalMap 2000, speed through water, water temperature, and a distance log can be viewed. To display the water speed, temperature, log, or temperature graph, you must use the "Customize Display" menu. See the "Customize Screens" section for more information on customizing your display.

You can also calibrate the speed sensor that's connected to the sonar module, reset the distance log to zero, and set the temperature graph's range. To do this, press the MENU key, then press the key next to the "More" label until the screen shown above appears. Now press the key next to the "Speed / Temp Sensor, Temp Graph" label. The screen at right appears.



To calibrate the speed sensor (Speed) press the arrow key next to the (+) to increase the speed displayed in the "Speed" window or press the key next to the (-) to decrease it.

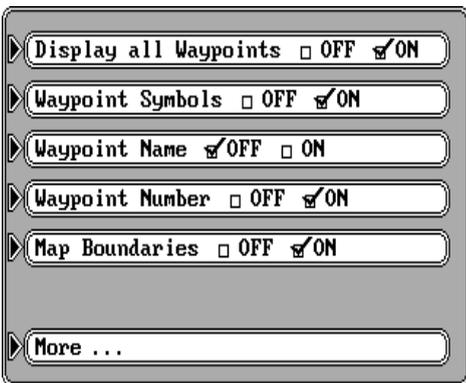
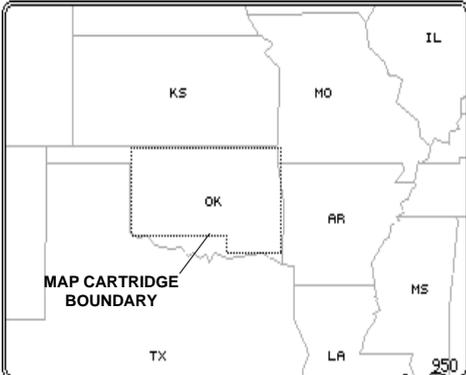
(Note: This only works on the speed sensor connected to the sonar module. You cannot calibrate the speed from the GPS module or NMEA which is displayed in the “SOG” window.

To reset the distance log to zero, simply press the key next to the “Reset Dist. Log” label. The current distance log is shown to the right of this menu. (Note: The distance log gets its information from the sonar module’s speed sensor only.)

The water temperature graph shown at the bottom of this page has a ten degree range as its default. For example, in the screen shown above, the temperature graph range is from 70 to 80 degrees, a ten degree range. You can change this range to 2 or 4 degrees by pressing the key next to the “Graph Range”.

MAP BOUNDARIES

When you are using a Lowrance IMS SmartMap™ or C-MAP map cartridge, the GlobalMap 2000 automatically displays the map’s boundaries as shown at right. To turn this feature off, press the MENU key, then press the key next to the “Mapping Setup” label. Now press the key next to the “More” label. The screen shown below appears. Now press the key next to the “Map Boundaries” label. Press the CLR key to erase this menu. Repeat these steps to turn the boundaries on.



GLOBALMAP 2000™

SONAR OPERATION

Notes:

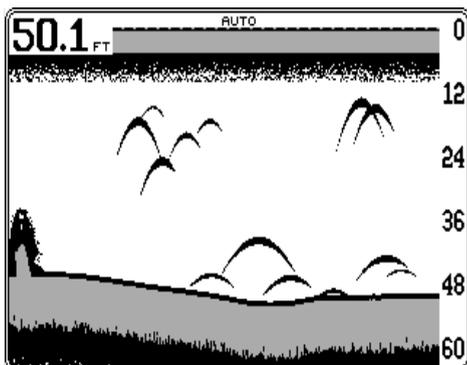
1. Sonar operation requires the installation of an optional SAM Sonar Access Module.
2. The sonar module's frequency now shows at the bottom of the sonar screen. (50 kHz or 192 kHz) This was a late change, so the illustrations in this manual do not show the frequency on the sonar screens.

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SONAR OPERATION - General

To view the sonar data, press the SONAR key at the bottom of the unit. A screen similar to the one below appears. This is a full-screen sonar display. The sonar data scrolls from right to left. The unit is in the automatic mode, shown at the top of the screen by the word "AUTO". The automatic feature keeps the bottom displayed at all times, changing the range and sensitivity levels as required. The digital depth display is in the upper left corner of the screen. This shows a continuous display of the current bottom depth.



On the right side of the screen, scale numbers show the relative depth of targets and the current depth range. In this example, the range is 0 - 60 feet. Grayline shows the relative target strength, including the bottom. A wide gray line indicates a hard bottom, whereas a narrow gray line designates a soft bottom.

Try using the sonar in the automatic mode at first. As you become familiar with the information shown on the screen, try adjusting some of the features such as zoom, upper and lower limits, sensitivity, and more. You'll soon find the sonar features of the GlobalMap 2000 outshine most of the competition's most expensive units.

Note: This unit stores all changes in memory. You can, if necessary, preset the sonar. This is a menu feature that resets the sonar to the factory defaults. See the "Sonar Preset" section for more information.

SONAR KEY

The Sonar key switches the unit from mapping to sonar or a split-screen sonar/navigation unit. Pressing the SONAR key for the first time shows the full-screen sonar. Press it again and the split screen zoom display appears. All echoes on the left side of the screen are the same as the ones on the bottom half of the right side, enlarged to twice their normal size. Press the SONAR key again and the screen changes to a sonar display on the left side of the screen and navigation data boxes on the right. Press the SONAR key one more time to return to the full-screen sonar display.

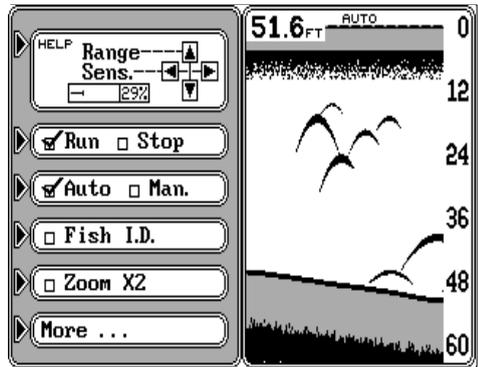
The SONAR key allows quick changes between sonar screens, each of which can be customized to your needs.

AUTOMATIC

The automatic feature is enabled when the unit is first turned on. This feature adjusts the sensitivity and range so the bottom signal shows in the bottom half of the display at all times. The word "AUTO" appears at the top of the screen when the automatic feature is on.

Note: You can adjust the sensitivity, and to a lesser extent, the range at any time simply by pressing the arrow keys. The left and right arrow keys control the sensitivity while the up and down arrow keys control the range. When automatic is on, however, the amount of adjustment is limited.

To turn automatic off, press the MENU key, then press the key next to the "Sonar Controls ..." label. Now press the key adjacent to the "Auto Man." label. This moves the check mark from the "Auto" box to the "Man" box. Now press the CLR key. The menus disappear and the full screen sonar shows. The letters "MAN" at the top of the screen signifies that the unit is in the manual mode. You can now make any changes or adjustments to the sonar as desired.



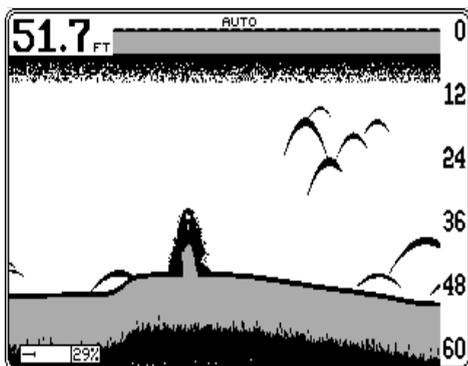
Repeat the above steps to turn automatic on.

SENSITIVITY

The sensitivity level controls the unit's ability to detect echoes. Low sensitivity excludes much of the bottom information, fish signals, and other target information. High sensitivity levels let you see this detail, but it can also clutter the screen with many undesired signals. Typically, the best sensitivity level shows a good, solid bottom signal with Grayline and some surface clutter. The unit adjusts the sensitivity when the automatic mode is on, keeping a solid bottom signal displayed, however this may not be the best level for all situations.

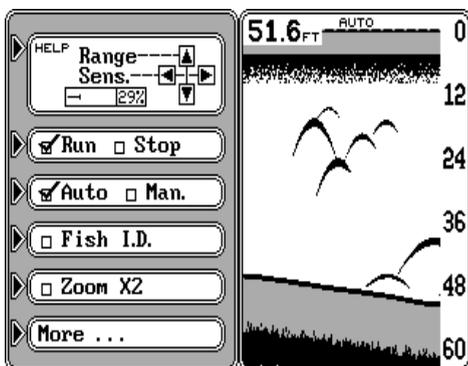
You can change the sensitivity level at any time by simply pressing the left or right arrow keys. When either key is pressed, a small menu appears in the bottom left corner of the display. This menu shows the sensitivity level

currently in use. Continue pressing the arrow keys until you reach the desired level. If the unit is in the automatic mode, the sensitivity level can't be increased or decreased past a certain point.



An easy way to adjust the sensitivity in the manual mode is to first change the range to a depth that's at least twice as deep as the current range. For example, if the range is 0 - 60 feet, change it to 0 - 120 feet. Now increase the sensitivity by pressing the up arrow key until a second bottom signal appears on the screen at twice the depth of the actual depth. This signal is the "second echo" and is caused by the sound wave travelling from the transducer, striking the bottom, reflecting off the water's surface, and repeating the cycle. Once you see the second echo appear, change the range back to the original scale. The sensitivity level should be close to ideal. If there's too much noise on the screen (random echoes), or if you still can't see enough detail, bump the sensitivity up or down a step.

Another way to adjust the sensitivity level is through the menus. Press the MENU key, then press the key adjacent to the "Sonar Controls ..." menu. A screen similar to the one at right appears. Now press the right or left arrow keys to increase or decrease the sensitivity level. The bar graph in the upper left corner of the screen shows the level currently in use.



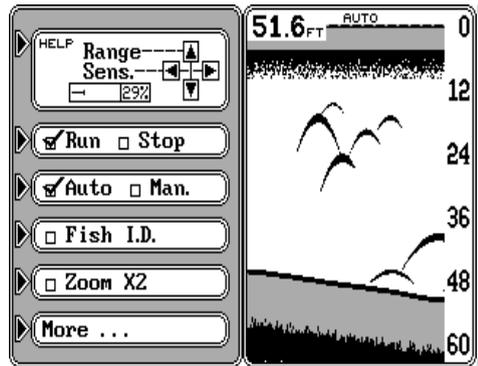
When you're finished with the adjustment, press the CLR key to erase the menus.

RANGE

The range can only be varied a little when the automatic mode is on. The unit adjusts the range to keep the bottom signal in the lower half of the display at all times. You can change the range to virtually any number between 5 and 5000 feet when the unit is in the manual mode.

To change the range, simply press the up arrow key to decrease it or the down arrow key to increase it. If the unit is in automatic, it may change the range immediately to keep the bottom on the screen.

Another way to adjust the range is through the menus. Press the MENU key, then press the key adjacent to the "Sonar Controls ..." menu. A screen similar to the one at right appears. Now press the up or down arrow keys to decrease or increase the range. When you're finished with the adjustment, press the CLR key to erase the menus.

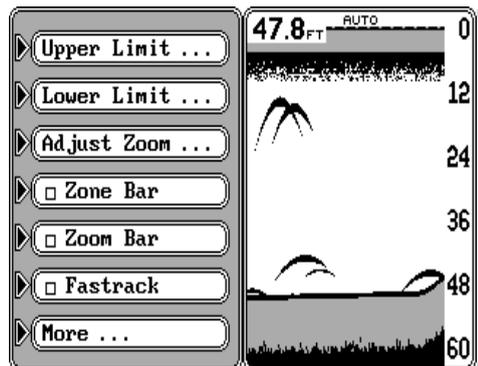


The available ranges available with the arrow keys are: 0 - 5, 10, 20, 30, 40, 60, 100, 150, 200, 300, 500, 800, 1000, 1500, 2000, 3000, and 5000 feet; 0 - 3, 5, 10, 12, 15, 20, 30, 40, 60, 100, 150, 200, 300, 400, 600, 1000, and 1500 meters; 0 - 1.2, 2, 5, 7, 10, 15, 20, 30, 40, 60, 80, 100, 150, 200, 300, 500, and 800 fathoms.

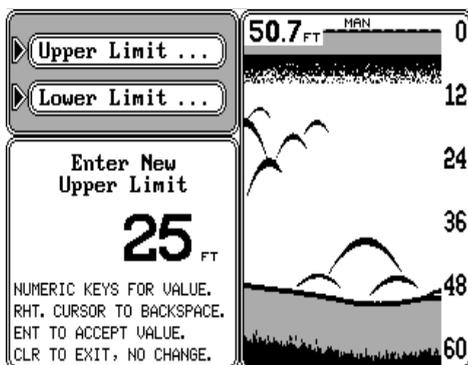
UPPER AND LOWER LIMITS

When the manual mode is on, the range's upper and lower limits can be changed in one foot increments provided there is at least ten feet between them. For example, an upper limit of 31 feet and a lower limit of 41 feet has a ten foot range. This feature gives you unparalleled control, allowing you to see virtually any segment of the underwater world. Using the upper and lower limits makes zooming in on structure, fish, and other targets easy.

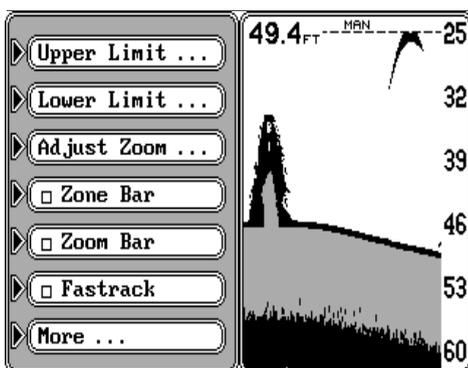
To use the upper and lower limits, first make certain the unit is in the manual mode. Now press the MENU key, then press the key next to the "Sonar Controls ..." label. Finally, press the key next to the "More ..." label at the bottom of the menu. A screen similar to the one at right appears.



To change the upper limit, press the key adjacent to the "Upper Limit" label. A screen similar to the one at right appears. Using the numbered keys, enter the desired upper limit, then press the ENT key. In this example, we entered 25 feet. The GlobalMap 2000 returns to the sonar menu using the new range as shown below.



Changing the lower limit is identical to the upper limit, except you press the key next to the "Lower Limit" label. Simply enter the desired lower limit and press the ENT key.



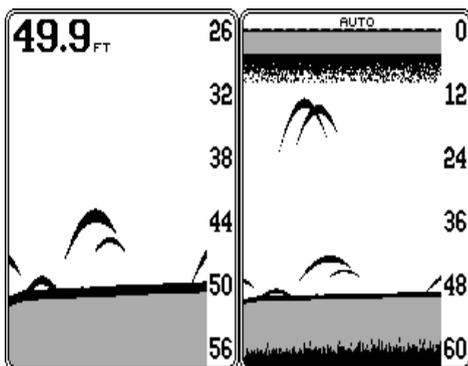
When you're finished with the upper and lower limits, press the CLR key to erase the sonar menus.

ZOOM

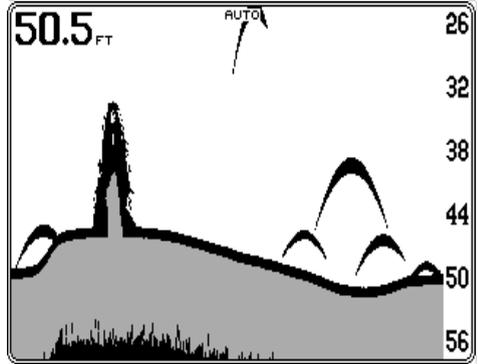
Enlarging or "zooming" the picture is a common method used to show small detail and fish signals. Although changing the upper and lower limits gives you precise control over the range, the zoom feature is faster. The zoom feature works differently in automatic versus manual.

Automatic

For a fast 2 times view of the current display, simply press the SONAR key. This splits the screen into left and right sides. The right side shows the current information in a normal view. The left side shows all of the echoes from the lower half of the right side at the same time. The left side is actually showing the right side's echoes - but twice as large.

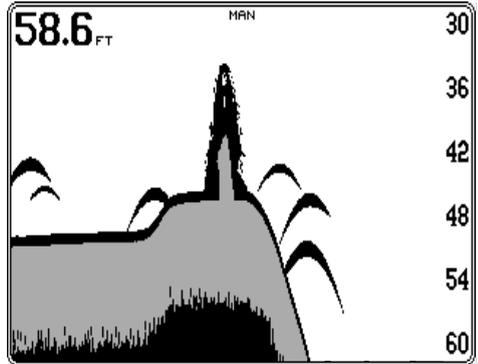


For a full screen zoom view, simply press the SONAR key until the full screen zoom appears. Since the unit is in the automatic mode, the GlobalMap 2000 keeps the bottom signal on the screen at all times, automatically adjusting the range.

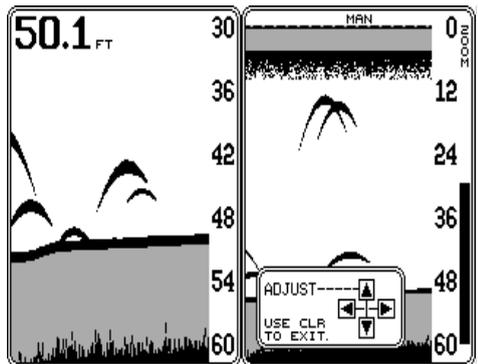


Manual

If you're in the manual mode, pressing the SONAR key gives you a 2X zoom, identical to the one described above. However, the unit won't track the bottom since it's in the manual mode. The bottom signal may drop off the bottom of the screen, or rise above the top. To adjust the zoom while in the manual mode, first press the MENU key, then press the key adjacent to the "Sonar Controls..." label. Now press the key next to the "More..." label. A screen similar to the one above appears. Now press the key next to the "AdjustZoom" label. The screen shown below appears. Note the zoom bar at the far right side of the screen. All echoes appearing between the top and bottom of this bar are shown on the left side of the screen. If you wish to change this, use the up and down arrow keys to move the zoom bar to the desired location. When you're finished, press the CLR key.



An easy way to change the zoom range is to simply press the ZOOM IN or ZOOM OUT keys. These keys work on the sonar screen the same way as they do on the mapping screens.



ZOOM BAR

After pressing the CLR key in the above procedure, the zoom bar disappears. If you wish to leave the zoom bar on the display at all times, press the MENU key, then press the key next to the "Sonar Controls" label. Now press the key next to the "Sonar Controls" label. Now press the key next to the "Zoom Bar" label. Press the key next to that label. Now press the CLR key. The unit returns to the sonar screen with the zoom bar displayed at the far right side of the screen with a zoom display. To turn the zoom bar off, repeat the above steps.

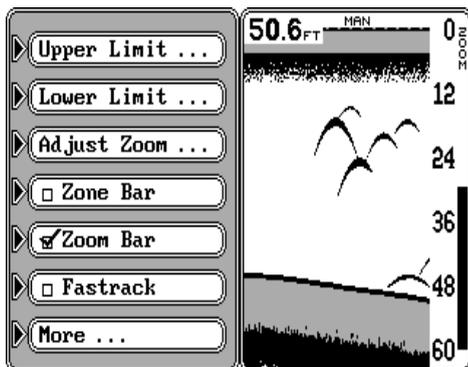
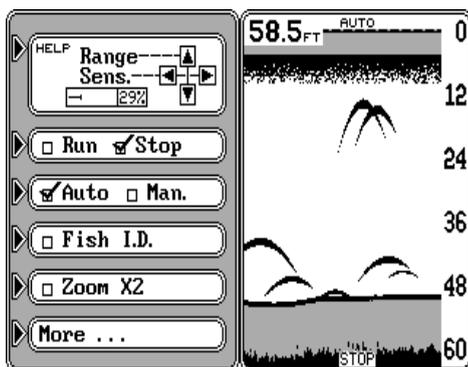


CHART STOP

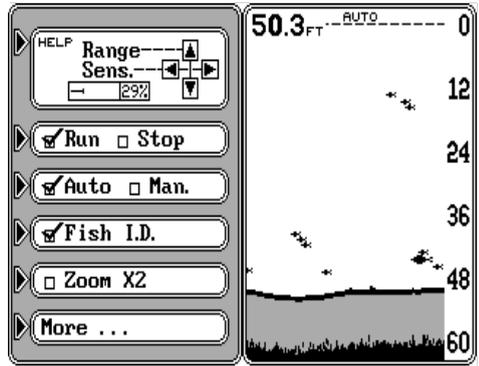
Occasionally, you'll see something on the screen that you'll want to study. To stop the chart, press the MENU key, then press the key next to the "Sonar Controls" label. Finally, press the key next to the "Run Stop" label. This freezes the screen until you press the same key again. You can press the CLR key while the chart is stopped, seeing a full screen sonar, if desired. The word "STOP" appears at the bottom of the screen when the chart is stopped. To start the chart, repeat the above steps. This moves the check mark in the menu from "Stop" to "Run" and the chart resumes scrolling.



Fish I.D. / FishTrack

The Fish I.D. feature identifies targets that meet certain conditions as fish. The microcomputer analyses all echoes and eliminates surface clutter, thermoclines, and other undesirable signals. In most cases, remaining targets are fish. The Fish I.D. feature displays symbols on the screen in place of the actual fish echoes. There are three fish symbol sizes: small, medium, and large. These are used to designate the relative size between targets. In other words, it displays a small fish symbol when it thinks a target is a small fish, a medium symbol on a larger target, and so on.

The microcomputer is sophisticated, but it can be fooled. It can't distinguish between fish and other suspended objects such as trotlines, turtles, submerged floats, air bubbles, etc. Individual tree limbs extending outwards are very hard for the unit to distinguish from fish. You may see fish symbols on the screen when there actually are no fish. Practice with the unit in both the Fish I.D. mode and without to become more familiar with the Fish I.D. feature.



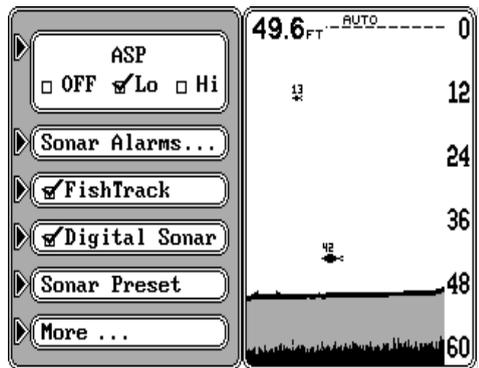
FISH ID ON

To turn the Fish I.D. feature on, press the MENU key, then press the key next to the "Sonar Controls" label. Now press the key adjacent to the "Fish I.D." label. Finally, press the CLR key. The screen clears, drawing the sonar information without the surface clutter. This doesn't show when the Fish I.D. feature is on. Only the bottom and structure attached to the bottom along with fish symbols appear when the Fish I.D. feature is on.

If the unit is in the manual mode when you turn Fish I.D. on, the automatic mode is also enabled. Fish I.D. doesn't work in the manual mode.

FishTrack™

Numbers appear above the fish symbols when the Fish I.D. feature is turned on. These numbers are the depth of the target at that fish symbol's location. This depth feature is called "FishTrack" and can be turned off, if desired.

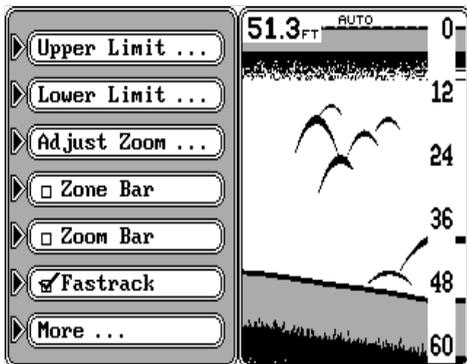


FISHTRACK ON

To turn the FishTrack feature off or on, press the MENU key, then press the key next to the "Sonar Controls" label. Now press the key next to the "More" label until the "FishTrack" label appears. Press the key next to that label. The GlobalMap 2000 will stop placing depth numbers on following fish symbols. Repeat the above steps to turn FishTrack on.

FASTRACK

The FasTrack feature converts all echoes to short horizontal lines on the right side of the display. The graph continues to operate normally. FasTrack looks similar to a flasher, making it useful for fishing at anchor. Since the unit isn't moving, fish signals are long lines on a normal chart display. FasTrack converts the graph to a vertical bar graph that, with practice, makes a useful fishing accessory.



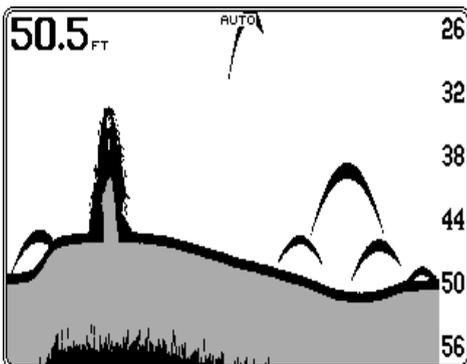
To turn FasTrack on, press the MENU key, then press the key next to the "Sonar Controls" label. Now press the key adjacent to the "More" label until the "FasTrack" menu appears. Press the key next to that label. Finally, press the CLR key to erase the menus. To turn FasTrack off, repeat the above steps.

GRAYLINE®

An easy way to determine the relative strength of echoes is by using the Grayline feature. This feature "paints" gray on targets that are stronger than a preset value. This lets you see the difference between a hard and soft bottom. For example, a soft or muddy bottom returns a weaker signal which is shown with a narrow or no gray line. A hard bottom returns a strong signal which causes a wide gray line.

Grayline also helps determine the strength of target echoes. If you have two targets of equal size, one with gray and the other without, then the target with gray is the stronger signal. This helps distinguish weeds from trees on the bottom, or fish from structure.

Grayline is adjustable. Since it shows the difference between strong and weak signals, adjusting the sensitivity may also require a change in the Grayline level. The level chosen by the GlobalMap 2000 is usually adequate for most conditions. Experiment with your unit to find the Grayline setting that's best for you.



To adjust the Grayline level, press the MENU key, then press the key next to the “Sonar Controls” label. Now press the key adjacent to the “More” label until the “Grayline” menu appears as shown at right. Press the key next to the right arrow in the Grayline menu to increase it. Press the key adjacent to the left arrow in the menu to decrease the Grayline level. The box in the menu has a bar graph and percentage indicator, letting you view the amount of Grayline in use. You can also see the change on the chart. When you have it at the desired setting, press the CLR key to erase the menus.

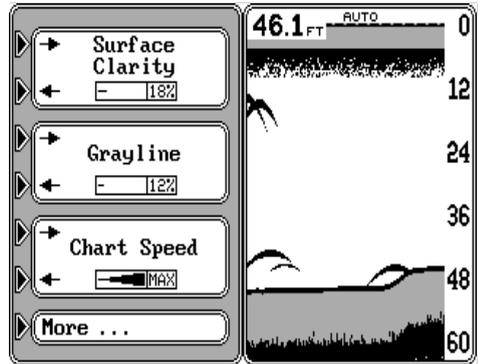


CHART SPEED

You can adjust the rate that echoes move across the screen. This is called “chart speed” and normally is set to maximum. If you wish to slow this down, first press the MENU key, then press the key next to the “Sonar Controls” label. Now press the key adjacent to the “More” label until the “Chart Speed” menu appears as shown above. Press the key next to the right arrow in the chart speed menu to increase it. Press the key adjacent to the left arrow in the menu to decrease the speed. The box in the menu has a bar graph and percentage indicator, letting you view the speed level. You can also see the change on the chart. When you have it at the desired setting, press the CLR key to erase the menus.

SONAR ALARMS

The GlobalMap 2000 has three different types of sonar alarms: Fish, Zone, and Depth. The fish alarm sounds a tone whenever the Fish I.D. feature places a fish symbol on the display. The zone alarm trips when an echo appears between the top and bottom of the zone alarm’s bar. The depth alarm actually consists of two different alarms; a shallow alarm and a deep alarm. These alarms are triggered only by the bottom signal.

To set or adjust a sonar alarm, first press the MENU key, then press the key next to the “Sonar Controls” label. Now press the key adjacent to the “More” label until the “Sonar Alarms” menu appears. Press the key next to that menu. The screen at the top of the next page appears.

Depth Alarms

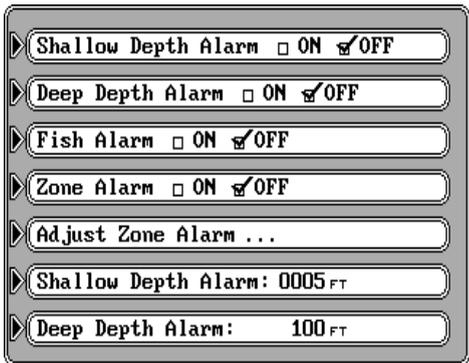
The depth alarms sound a tone when the bottom signal goes shallower than the shallow alarm's setting or deeper than the deep alarm's setting. For example, if you set the shallow alarm to ten feet, the alarm will sound a tone if the bottom signal is less than ten feet. It will continue to sound until you mute it or when the bottom goes deeper than ten feet. The deep alarm works just the opposite. It sounds a warning tone if the bottom depth goes deeper than the alarm's setting. Both depth alarms work only off the digital bottom depth sonar. No other targets will trip these alarms. The shallow and deep alarms can be used individually or together.



To turn either alarm on, simply press the key adjacent to the desired alarm's label. For example, to turn the shallow alarm on, simply press the key next to the "Shallow Depth Alarm ON OFF" label. This moves the check box from "OFF" to "ON" and turns the alarm on.

The default setting for the shallow alarm is 10 feet and 100 feet for the deep alarm. If you need to change the shallow or deep alarm's depth, first press the key next to the desired alarm menu at the bottom of the sonar alarm menu. In this example, we'll change the shallow alarm to five feet, so we press the key next to the "Shallow Depth Alarm: 10FT". The number "1" begins flashing. Press the "0" key to change the "1" to "0". Now press the right arrow key once to move to the last zero. It will start flashing. Now press the "5" key. The display should now read 0005, or 5 feet. Finally, press the ENT key. The menu shows "Shallow Depth Alarm: 5FT". The alarm will sound if the bottom signal goes shallower than 5 feet. If you make a mistake, or simply don't want to make a change in the depth menu, simply press the CLR key to exit without changing the alarm's depth.

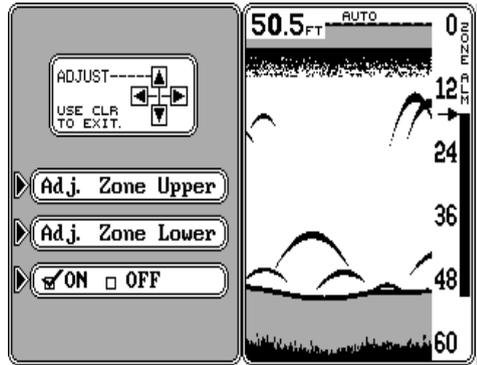
The deep depth alarm adjusts in exactly the same manner.



Zone Alarm

The zone alarm consists of a bar that appears on the right side of the display during the adjustment. You can also turn the zone alarm bar on continuously. Any echo that passes between the top and bottom of the zone alarm's bar trips the zone alarm, even if the zone alarm bar is not displayed.

To adjust the zone alarm, press the key adjacent to the "Adjust Zone Alarm" label on the "Sonar Alarms" menu. A screen similar to the one at right appears. This automatically turns the zone alarm on. If you don't want to listen to the alarm while you're adjusting it, press the key next to the "ON/OFF" label. This turns the zone alarm off. Now press the key next to the "Adj. Zone Upper" to move the



top of the bar or press the key next to the "Adj. Zone Lower" to move the bottom of the zone alarm bar. Use the up and down arrow keys to move the end of the bar to the desired depth. When you're finished, press the CLR key to exit this menu.

Zone Alarm Bar

If you wish to leave the zone alarm bar on the display at all times, press the MENU key, then press the key adjacent to the "Sonar Controls" label. Now press the key next to the "More" label until the "Zone Bar" menu appears. Press the key adjacent to that label. The zone bar appears on the display. To turn it off, repeat the above steps.

Fish Alarm

The fish alarm sounds a tone when the Fish I.D. feature places a fish symbol on the display. A different tone sounds, depending on the fish symbol's size.

To turn the fish alarm on, first press the MENU key, then press the key next to the "Sonar Controls" label. Now press the key adjacent to the "More" label until the "Sonar Alarms" menu appears. Press the key next to that menu. Now press the key adjacent to the "Fish Alarm" menu. Finally, press the CLR key. The unit returns to the sonar screen with the fish alarm enabled. Repeat the above steps to turn the fish alarm off.

ASP and Surface Clarity Control

Noise, in electronic terms, is any undesired signal. Noise shows on the display as random patterns of dots or lines. In severe cases, it can completely cover the screen with black dots or lines, obscuring target and bottom echoes. It's caused by mechanical and electrical sources such as bilge pumps, engine ignition systems and wiring, air bubbles passing over the transducer's face, even engine vibration.

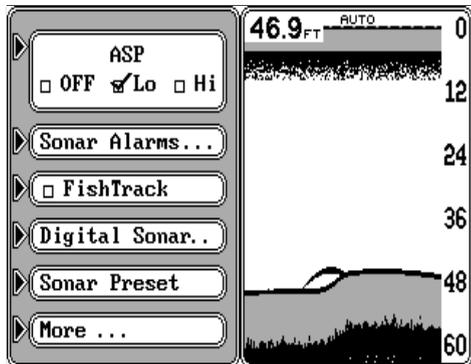
This unit has an efficient noise rejection system called Advanced Signal Processing or ASP. Noise signals are effectively reduced or eliminated with this feature. ASP constantly evaluates the effects of boat speed, water conditions, and interference, rejecting signals it recognizes as noise, and letting target and bottom echoes pass.

Surface Clarity Control acts only on interference near the surface. This feature reduces the "clutter" or random signals seen on and near the top of the display. This noise is caused by many things including tiny plant and animal life, wave action, and boat wakes.

When the unit is first turned on, or after it's reset, both ASP and Surface Clarity Control are automatically enabled. Both features are adjustable or can be turned completely off, if desired.

To adjust ASP, press the MENU key, then press the key adjacent to the "Sonar Controls" label. Now press the key next to the "More" label until the ASP menu appears as shown at the top of the next page. You'll notice it has two levels: Low and High. To change the ASP level, simply press the key next to the arrow on the ASP menu until the check mark lands on the desired level. When you're finished, press the CLR key.

To adjust the Surface Clarity Control, press the MENU key, then press the key adjacent to the "Sonar Controls" label. Now press the key next to the "More" label until the Surface Clarity menu appears as shown at the top of the next page. Press the key next to the right arrow in the Surface Clarity menu to increase its level, press the key adjacent to the left arrow to

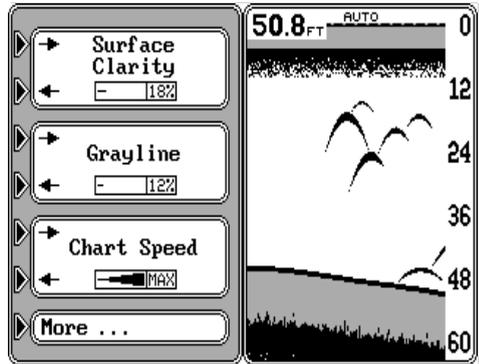


decrease it. The bar graph and percentage number shows the level of surface clarity in use. Press the CLR key when you're finished.

DIGITAL SONAR

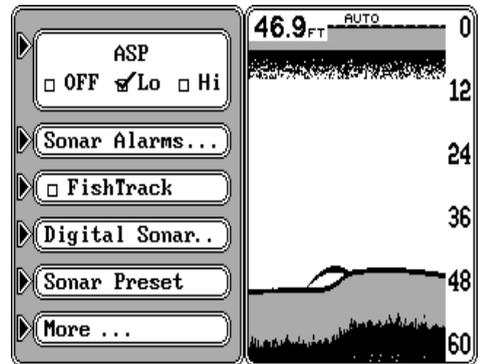
Each SAM actually has two sonar units in one box. One sonar is dedicated to the graph display, the other is the digital sonar display. The digital sonar

is responsible for the digital depth display and the automatic features. If the digital bottom depth display in the upper left corner of the screen flashes, this means the digital sonar has lost the bottom and is trying to reacquire it. The number that it flashes is the last known water depth.



You can turn the digital sonar off, if desired. Although you will lose all automatic functions and depth alarms, the chart display will be speeded up slightly.

To turn the digital sonar off, press the MENU key, then press the key adjacent to the "Sonar Controls" label. Now press the key next to the "More" label until the Digital Sonar menu appears as shown at right. Press the key adjacent to that label. The menu shown

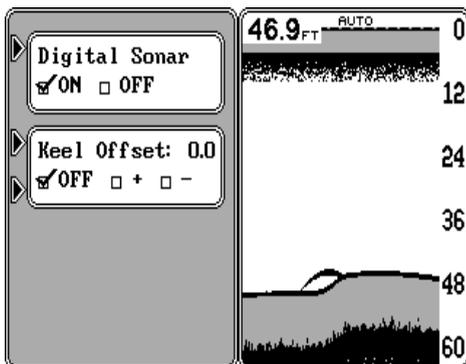


below appears. Now press the key adjacent to the "Digital Sonar ON OFF" label. To turn the digital sonar on again, repeat the above steps.

KEEL OFFSET

The keel offset feature lets you compensate for the transducer's location on the boat. Since this sonar unit measures water depth from the face of the transducer to the bottom, there can be a significant difference between the actual water depth and the depth displayed on the sonar unit. For example, suppose you mount a bolt-thru-hull transducer on the bottom of the hull. When you launch the boat you find that this location places the transducer three feet below the water's surface. Therefore, the depth sounder always reads three feet *shallower* than the actual water depth. (In other words, if the bottom is 50 feet deep, the depth sounder will read 47

feet, if the transducer is mounted three feet below the surface.) The difference between the depth sounder's reading (47 feet) and the actual water depth (50 feet) is called the keel offset. In this example, to make the digital sonar read the correct depth, you would use a *positive* keel offset of three feet.



Another time you may wish to change the keel offset is if you want to know the bottom depth from the deepest part of the boat. For example, by carefully measurement you find that the deepest part of the boat is four feet below the transducer's face. By setting a *negative* keel offset of four feet, the sonar unit will show the bottom depth from the lowest part of the boat to the bottom.

IMPORTANT!

The digital depth display is the only display that is affected by the keel offset feature! The chart always shows the distance from the transducer's face.

To adjust the keel offset, press the MENU key repeatedly until the Keel Offset menu appears as shown above. Now press the key next to that menu until the check mark is on the desired box. "+" is for a positive keel offset, "-" for a negative one. When the check mark is on the desired box, enter the keel offset using the numbered keys, then press the ENT key. Press the CLR key to return to the sonar screen. Remember, the digital sonar display shows the keel offset, not the chart. Also, the depth alarms will use the keel offset, so remember this when setting a shallow or deep alarm.

SONAR PRESET

To return only the sonar settings to their factory defaults, use the Sonar Preset feature. The defaults are as follows:

- Automatic: On
- Fish ID: Off
- FishTrack: On
- Digital Sonar: On
- Zoom: Off
- Alarms: All Alarms Off
 - Shallow Depth Alarm Setting: 10 Feet
 - Deep Depth Alarm Setting: 100 Feet

Zone and Zoom Bars: Off
 Keel Offset Off
 FasTrack: Off
 Surface Clarity: 18%
 Grayline: 12%
 Chart Speed: Maximum
 ASP: Low

Press the MENU key, then press the key adjacent to the "Sonar Controls" label. Now press the key next to the "More" label until the "Sonar Preset" menu appears as shown on the previous page. Finally, press the key adjacent to that label. The screen will clear, then the full-screen sonar appears and new echoes will begin scrolling across the screen.

NOTICE!

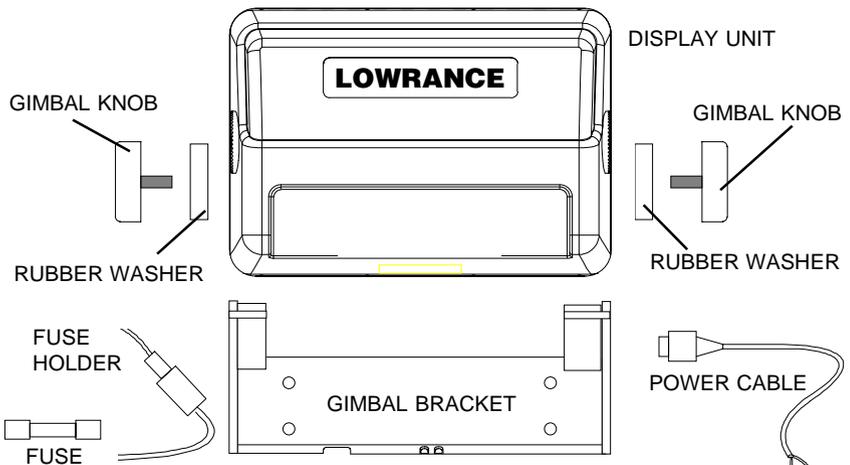
Please check the items in the box against this list. You should have all of the items shown on this page. If you are missing any of the items, please call our special toll-free number:

1-800-324-1353

A RECORDED MESSAGE will request the following information. Please have it ready before you call.

1. Your name, shipping address, and telephone number.
2. The part that's missing.
3. The model, serial number, and DATE AND PLACE OF PURCHASE OF YOUR UNIT.
4. The best time of day to call you if we have questions.

Provided that all of the requested information is recorded and approved by our Customer Service Department, the missing item(s) will be shipped directly to you free of charge.



LOWRANCE ELECTRONICS FULL ONE-YEAR WARRANTY

"We", "our", or "us" refers to LOWRANCE ELECTRONICS, INC., 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-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. 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.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original

LOWRANCE ELECTRONICS
12000 E. SKELLY DRIVE TULSA, OK 74128

(800) 324-1356

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 LOWRANCE ELECTRONICS ("WE", "OUR", OR "US"). USING THE PRODUCT ACCOMPANIED BY THIS LICENSE AGREEMENT CONSTITUTES ACCEPTANCE OF THESE TERMS AND CONDITIONS.

1. This License Agreement applies to the one or more databases that you 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 mapping data, the "SmartMap Database" which contains inland mapping data, the "C-Map Database" which contains cartographic 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 reproduction, use, or transfer of a Database may be a crime and may subject you to damages and attorney fees.
4. This License Agreement will terminate immediately without prior notice from us if you fail to comply with or violate any of the provisions of this Agreement. Upon termination, you will promptly return all products 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 Lowrance Electronics Inc., 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, the "C-Map Database" which contains cartographic 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.

Lowrance's UPS Return Service

Lowrance 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 Lowrance at the toll-free number on the front of this flyer 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 Lowrance's customer service department at no charge to you. Units under warranty will be returned to you at no charge.

NOTE!

Lowrance 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.

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

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

Lowrance 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.

Accessory Ordering Information

To order accessories such as power cables or transducers, 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.)

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

We back your investment in quality products with quick, expert service and genuine Lowrance® 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:

800-324-1356

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 85 inside this manual for complete warranty details.) If your unit fails and the failure is not covered by the original warranty, Lowrance 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.

Lowrance 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 88 for more information. Remember, non-warranty repairs are subject to Lowrance's published flat-rate charges and 180-day warranty.