

GEONAV 6 ^{PLUS³} ^{ELITE³}



User and Installation Guide

READ THIS WARNING BEFORE USING THE GEONAV

WARNING

THE ELECTRONIC CHART IS AN AID TO NAVIGATION DESIGNED TO FACILITATE THE USE OF AUTHORIZED GOVERNMENT CHARTS, NOT TO REPLACE THEM. ONLY OFFICIAL GOVERNMENT CHARTS AND NOTICES TO MARINERS CONTAIN ALL INFORMATION NEEDED FOR THE SAFETY OF NAVIGATION AND, AS ALWAYS, THE CAPTAIN IS RESPONSIBLE FOR THEIR PROPER USE.

The use of the GEONAV implies knowledge and acceptance of this warning by the user.

NOTE: This guide applies to the GEONAV 6 Plus³ and GEONAV 6 Elite³. The functions peculiar to each model are highlighted in the text. Unless otherwise specified, functions are intended as common to all models. Technical characteristics and functions described in this manual are subject to change as a result of improvements or changes to the product.

INTRODUCTION

The GEONAV is a graphic GPS plotter that displays your boat's current position with respect to an electronic chart.

Plus³ | The Plus³ model is equipped with a built-in GPS receiver.

Elite³ | The Elite³ model is equipped with a built-in GPS receiver with an external differential input.

The GEONAV can track up to 12 satellites simultaneously and can be interfaced with:

- Elite³* |
- A DGPS antenna when using the built-in GPS
 - An external GPS
 - A depth sounder
 - An autopilot

By using a GEONAV and a NAVIONICS electronic chart, you will never get lost even in bad weather conditions such as fog, rain or dark because your plotter will always display where you are and where you are heading to.

The ROUTE function will allow you to plan a trip, MARKERS will allow you to mark points of interest whereas the TRACK function will allow you to record your actual route.

NAVIONICS chart cartridges are available for all popular boating areas around the world and can be used in addition to your official paper charts to have further information, including the forecast data relative to tides and currents.

NAVIONICS chart cartridges are available from authorized NAVIONICS dealers and outlets around the world.

See your local marine electronics dealer for further information.

Plus³

CHARACTERISTICS

GEONAV 6 PLUS³

General characteristics

- Self-contained GPS plotter system (Plotter + GPS receiver + Antenna)
- 12 -channel internal GPS
- Satellite acquisition time: 2 minutes (cold)
15 minutes first fix (with internal GPS)
- GOTO function (Waypoint, Port, Nearest Service, Marker, Track, Lat/Lon, R/B)
- Screen Amplifier™ function
- Autozoom™ function
- Overzoom™ function
- 8 marker shapes, 8-character name
- Reverse route function
- Selectable depth units (meters, feet and fathoms)
- Cartography with port services and Tides and Currents data
- 16 zoom levels
- Heading vector
- CompactFlash™ cartridge
- Storage of routes, tracks and markers in separate files on CompactFlash™ cartridges
- Built-in world map
- Splash-proof
- Weight: 1 kg

Electrical characteristics

- Input voltage: 11VDC to 18 VDC with protection against reverse polarity and overvoltage
- Power consumption: 6 W
- Operating temperature: 0° to +60° C, humidity 93%
- Storage temperature: -20°C to +70°C, humidity 93%
- Monochrome LCD with high visibility under sunlight
- Adjustable backlight and contrast
- Backlight keypad

Plus³

- Pixel resolution: 240 x 320
- 32-bit RISC processor

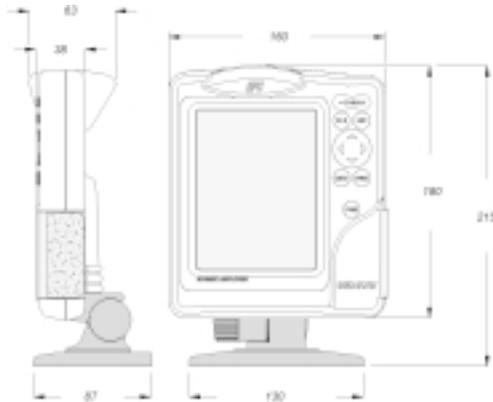
Memory characteristics

- 2 routes (1 active and 1 stored)
- Up to 20 waypoints per route
- 1 track, up to 500 trackpoints
- Up to 99 markers

Accessories

- Bracket for fixed installation and power supply cable with car lighter plug
- User's manual
- Bracket protection cap
- Carrying case

Mechanical dimensions



Elite³

GEONAV 6 ELITE³

General characteristics

- Self-contained GPS plotter system (Plotter + GPS receiver + Antenna)
- 12 -channel internal GPS, differential-ready
- Satellite acquisition time: 2 minutes (cold)
15 minutes first fix (with internal GPS)
- Possibility to use an external GPS via NMEA 0183
- Integrated depth sounder via NMEA 0183 (optional)
- Display of depth and water temperature data (if interfaced with an echosounder)
- Built-in world map
- Autopilot
- Chart rotation (head-up display)
- Splash-proof
- Weight: 1 kg

Electrical characteristics

- Input voltage: 11VDC to 18 VDC with protection against reverse polarity and overvoltage
- Power consumption: 6 W
- Operating temperature: 0° to +60° C, humidity 93%
- Storage temperature: -20°C to 70°C, humidity 93%
- 4-color LCD with high visibility under sunlight
- Adjustable backlight and contrast
- Backlight keypad
- Pixel resolution: 240 x 320
- 32-bit RISC processor

Memory characteristics

- 2 routes (1 active and 1 stored)
- Up to 20 waypoints per route
- 1 track, up to 500 trackpoints
- Up to 99 markers

*Elite³***Interface characteristics**

- Standard NMEA 0183 sentences
 - from the position sensor:
GLL, VTG, GGA, RMC, GSV, ZDA, RMA, GSA
 - from the depth sounder:
DBT, MTW
 - to the autopilot:
APA, APB, XTE, RMB, BWC, GLL, VTG

If received from the GPS, the following sentences are transmitted:

GGA, RMC, ZDA

- Protocol RTCM SC-104, BAUD RATE from 300 to 9600 bps
 - from the differential antenna

Accessories

- Bracket for fixed installation and power supply cable with car lighter plug
- Data cable for connection to external GPS, DGPS, depth sounder and autopilot
- User's manual
- Bracket protection cap
- Carrying case

INSTALLATION AND PRECAUTIONS

SAFE DISTANCES: When installed on a boat, in order to avoid electromagnetic interference, the GEONAV must be positioned at least 0.15 meters away from magnetic compasses or a flux-gate sensors, such as those used on autopilots and remote electronic compasses.

ENVIRONMENT: The GEONAV is water resistant, but not water-proof. It is essential that the rubber cover on the right side of the unit is firmly inserted into the cartridge slot; the rubber cover should be removed only when the Navchart™ has to be inserted or replaced and, in this case, the unit must be perfectly dry.

IMPORTANT: Any damage caused by water into the cartridge slot is specifically excluded from the warranty.

Cleaning

It is recommended that you use a non-alcoholic product to clean the glass, since alcoholic products may damage the glass surface or make it opaque.

*Elite³***Installation**

The GEONAV allows using either the built-in antenna for outdoor installation or an external GPS antenna for indoor use.

NOTE: At start-up, the plotter will select the internal GPS by default.

- **Internal GPS:** For the best reception of satellites, mount your unit in an open area to allow the built-in antenna to have the best sky visibility. If the instrument is installed so as to allow full horizon visibility, the best performance will be ensured. When using the built-in GPS receiver, the GEONAV can be interfaced with a DGPS (RTCM).

ATTENTION: The GEONAV can be connected to several DGPS whose function modes are the following:

- a) automatic frequency selection, or
- b) manual frequency selection with a wave-change switch.

Elite²

- **DGPS:** To connect the GEONAV to a DGPS antenna, use the data cable provided with the unit (see the *Connections* Section).
- **External GPS:** Instead of a built-in antenna, you can use an external GPS. To connect the GEONAV to an external antenna, use the data cable provided with the unit (see the *Connections* Section).
- **Autopilot:** To connect the GEONAV to an autopilot, use the data cable provided with the unit (see the *Connections* Section).
- **Depth sounder:** To connect the GEONAV to a depth sounder, use the data cable provided with the unit (see the *Connections* Section).

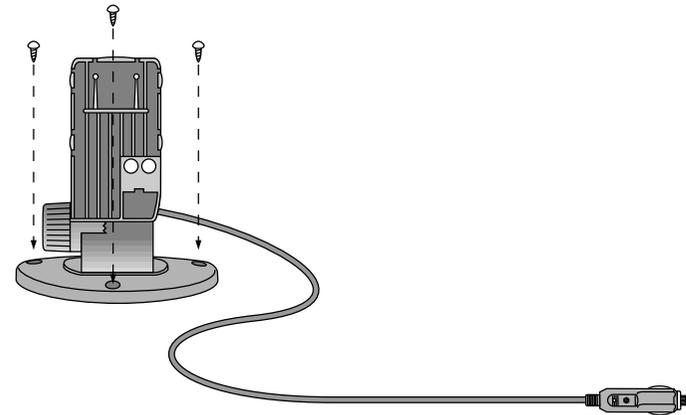
Mounting

The plotter can be mounted on any surface using the mounting bracket provided with the unit (see figure).

Use the 3 flat-head screws (6mm) to fix the bracket to the desired mounting surface. Since the bracket does not allow any left or right rotation, make sure that the unit is properly installed for the best view angle.

In the event that you wish to connect the power cable directly to the boat battery, cut the car lighter adapter off; we recommend the installation of a 2A fuse between the power source and the plotter to protect the instrument against overvoltage and/or overcurrent.

When the plotter is taken away from the bracket, we recommend that you use the cap supplied with the GEONAV to protect the electrical contacts against water.



CONNECTIONS

Power supply cable

The car lighter adapter has a little lamp (LED) that goes on if the car is correctly providing power to the bracket.

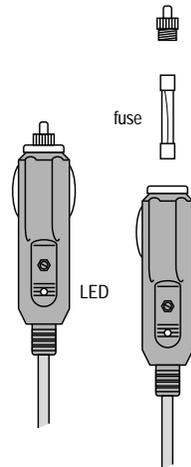
If the lamp is off:

- verify that 12V voltage is available from the lighter plug;
- open the adapter and check the fuse.

If the fuse is broken, replace it with a fuse having the same electrical characteristics.
DO NOT USE ANY BYPASS CIRCUIT.

The fuse ensures that the special protection circuit inside the plotter works properly in case of accidental short-circuit, polarity inversion and overvoltage. When removing the lighter adapter, connections are the following:

red (or white) +(+12V)
black - (ground)



Connector and data cable

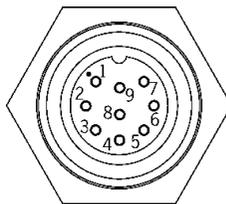
1. Auxiliary output voltage (Vaux)

red wire	Vaux +, 250mA	pin 1*
black wire	GND	pin 2
2. Data input ext. GPS/DGPS

brown wire	ext. GPS in +	pin 3
yellow wire	ext. GPS in -	pin 4
3. Data output

violet wire	Autopilot out +	pin 5
white wire	Autopilot out -	pin 6
4. Data input depth sounder

blue wire	DS in +	pin 7
green wire	DS in -	pin 8
SHIELD		pin 9



* Vaux voltage is the same as the plotter's input voltage.

Elite³ If sent by the autopilot, the following NMEA messages are transmitted to external devices: GGA - RMC - ZDA

The GEONAV will add the following messages: APA - APB - XTE - RMB - BWC - GLL - VTG

The data cable is supplied together with the GEONAV plotter.

WARNING: Once the installation is completed, always make sure that all wires are properly connected since wrong connections may damage the unit.

CARTRIDGE INSTALLATION

Installing the Navchart™

- Remove the rubber cover on the unit right side protecting the Navchart™ cartridge slot.
- Insert the cartridge into the slot paying attention to the reference groove.
- Replace the rubber cover exercising light pressure and make sure it is perfectly inserted to avoid any water infiltration.

Removing the Navchart™

- Make sure that the unit is perfectly dry.
- Remove the rubber cover on the unit right side and extract the Navchart™.

ATTENTION: The rubber cover should be removed only when inserting or replacing the cartridge.



KEYBOARD

ZOOM+/ZOOM-

Selects the chart range.

ENTER

Enters a marker or confirms a selection from the menu.

PAGE

- Navigation mode: Turns navigation data pages.
- Cursor mode: Allows switching from Cursor mode to Navigation mode.

GOTO

Allows plotting a route toward a manual cursor position, desired marker, port, nearest port service or specified position (lat/lon).

CLR

- Navigation mode: Deletes the current route.

- Cursor mode:

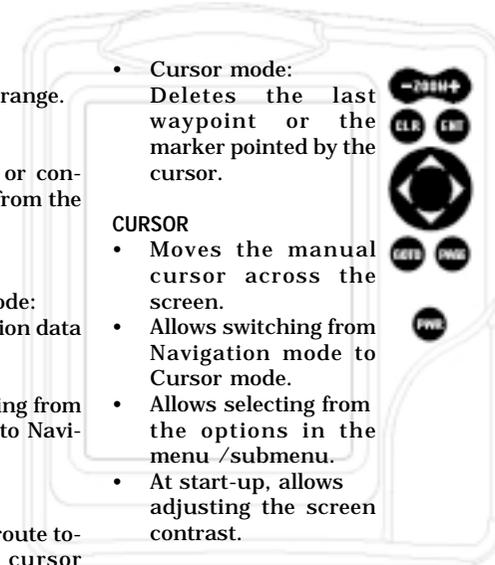
Deletes the last waypoint or the marker pointed by the cursor.

CURSOR

- Moves the manual cursor across the screen.
- Allows switching from Navigation mode to Cursor mode.
- Allows selecting from the options in the menu /submenu.
- At start-up, allows adjusting the screen contrast.

PWR

- Switches the GEONAV on / off.
- Allows adjusting the screen backlight.
- Allows adjusting the screen contrast.



DIAGNOSTIC

The GEONAV has a diagnostic program to verify its correct performance once installed and to detect problems that may occur during its operation. To perform these tests, switch the unit on by pressing simultaneously PWR and another key (except for CLR).

The GEONAV will automatically perform a test of the entire system; as soon as the memory test is completed, the program allows verifying whether each key works properly. An outline of the keyboard is displayed; press each key and check whether the corresponding key on the screen turns black. If the key is faulty, no change in color will occur.

The diagnostic program allows checking the correct connection between the built-in antenna or an external GPS and the unit (channel 0). The position sensor should be operating and should transmit NMEA 0183 messages. If the receiver is working, you will see a string of NMEA 0183 messages being displayed to indicate that the whole system is working correctly.

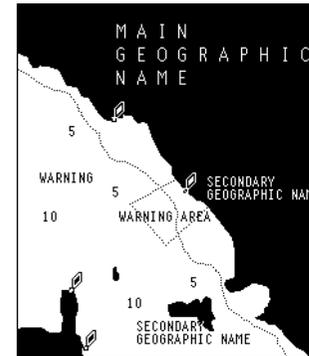
Keep CLR pressed to freeze the messages on the screen, then release CLR to keep on displaying NMEA 0183 messages.

Elite³ | To test channel 1 (depth sounder), press ZOOM-, to go back testing channel 0, press ZOOM+.

Press ENTER to exit the diagnostic program.

ATTENTION: It is possible to clear the contents of the GEONAV internal memory (not the Navchart™) and to reset the plotter to the starting point. To perform a memory reset, switch the unit on by pressing simultaneously the PWR and CLR keys.

NAVIONICS ELECTRONIC CHARTS



The GEONAV includes a built-in world map that allows zooming from 4,096 down to 512NM.

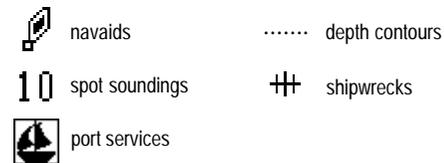
Additional cartography details relative to a specific area of navigation are available from NAVIONICS Seamless Navchart™ cartridges.

To display chart boundaries, press PAGE until the menu bar appears, select SETUP, DISPLAY MAPS and press ENTER to confirm.

A small square will locate the area covered by the cartridge installed. To increase/decrease chart details, press ZOOM.

NAVIONICS charts contain the following data:

- Main geographical names (continents, oceans, countries, etc.).
- Secondary geographical names (cities, towns, shoals, reefs, islands, etc.).
- Navigational aids:



TRACK	ROUTE	SETUP
CHART ROTATION	ON	OFF
DISPLAY MAPS	ON	OFF
DEPTH CONT. = 5M	ON	OFF
DEPTH CONT. = 10M	ON	OFF
DEPTH CONT. = 20M	ON	OFF
NAMES	ON	OFF
OVERZOOM	ON	OFF
CALIBRATION	ON	OFF
DIST. UNITS	NAUT	METR STAT
DEPTH UNITS	M	FT FA
GPS	INT	EXT
REFER. TIME	LOCAL	GMT
BEARINGS	TRUE	MAG
LANGUAGE	EN	FR ES DE IT DK
↑↓ SELECT	← CHANGE	ENTER / PAGE EXIT

Displaying depth contours
Press PAGE to display the menu bar, select SETUP, the set of depth contours, then ON/OFF.

Displaying geographical names
Press PAGE to display the menu bar, select SETUP, the NAMES option, then ON/OFF.

Converting depth values into the units set
Press PAGE to display the menu, select SETUP, DEPTH UNITS and then set the unit desired to meters, feet or fathoms.



The GEONAV will convert all the depth values in the unit selected, making them appear like those reported in the official nautical charts (see the figure).

Displaying navaid characteristics
To display navaid characteristics, position the manual cursor on the navaid symbol.
The navaid position is identified by the symbol.



Description of navaid characteristics:

ABBREVIATIONS FOR LIGHT		ABBREVIATIONS FOR COLOUR	
AL	alternating	AM	amber
F	fixed	B	black
FLL	fixed and flashing	BL	blue
FL (...)	group flashing	G	green
FL	single flashing	OR	orange
IQ	interrupted quick	R	red
OC	single-occuting	VL	violet
OC (...)	composite group occutting	W	white
Q	continuous group	Y	yellow

ABBREVIATION FOR PERIOD		ABBREVIATION FOR RANGE	
..S	xx seconds	..M	xx nautical miles

Displaying port services

NOTE: This function is available only with the NAVIONICS cartridges containing the Port Services feature.



The symbol identifies a port providing services.

Zoom down to 1 NM, position the manual cursor on the icon (sailing boat) relative to the selected marina.

By pressing ENTER, a window will list all the services available in that port.

Select the desired icon by using the CURSOR key.

Port services are identified by the following icons:

- | | |
|--|--|
|  Health services |  Tourist services and shops |
|  Engine, boat, electronic and other repairs |  Customer services |
|  Water |  Fuel |
|  Information and authorities | |

The services available depend on the NAVIONICS cartridge used.

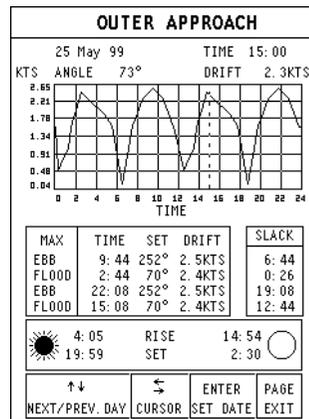
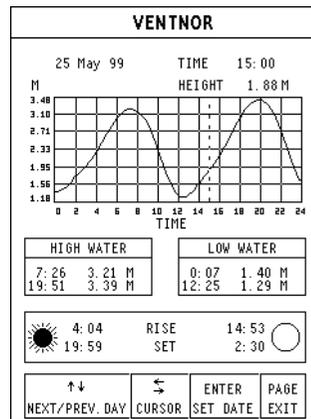
Elite²

Displaying Tides and Currents data

NOTE: This function is available only with the NAVIONICS cartridges containing Tides and Currents data.

Position the cursor on the icon of a Tide or Current station, then press ENTER.

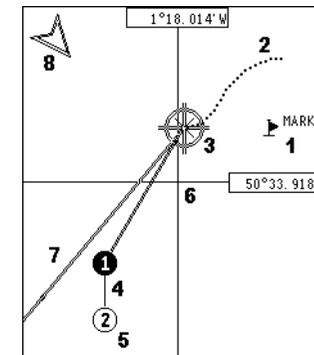
A graph will show the tide rate or the tidal stream relevant to the station selected, as measured during the current day.



GRAPHIC ITEMS

Besides chart data, the GEONAV displays some graphic items useful during navigation.

The figure below shows some of these items.



- 1 - Marker
Indicates a point of interest associated with a symbol and a name.
- 2 - Track segment
Recording of the track actually followed by the boat; the track is displayed as a dashed line.
- 3 - Boat's position
Boat's position according to the data received from the GPS receiver.
- 4 - Rubber band
Line joining the last waypoint entered to the manual cursor, or the boat's position to the manual cursor when no waypoint has been entered.

To delete this band, press the PAGE key and switch to Navigation mode.

5 - Route leg

Part of route between two waypoints.

6 - Waypoint

Waypoints are identified by a circle and a number. The route starting point is marked by the "X" symbol. The target waypoint is identified by a filled circle, whereas the route leg currently followed is identified by a thicker line.

7 - Cursor

Indicates the position expressed in geographical coordinates (latitude and longitude).

It is displayed when the plotter is in Cursor mode.

8 - Heading vector

Indicates graphically the boat's current route.

Elite² 9 - North indicator

Indicates the north direction when the Chart rotation function is enabled.

FUNCTIONAL CHARACTERISTICS

This chapter summarizes the most commonly used functions of the GEONAV and gives also a brief description of the terms that will appear in the following pages.

Elite² Internal or external GPS

To make the installation easy, the GEONAV can use either its own internal GPS receiver or an external receiver, depending on where the unit is to be installed (indoor or outdoor).

To select the internal/external GPS, press PAGE to display the menu, select SETUP, then GPS INT or GPS EXT. The selection of GPS INT will open a new window; select "YES" if the plotter is connected to a DGPS compatible with the internal GPS, otherwise select "NO". Confirm the operation by pressing ENTER.

Depth sounder

When in depth sounder mode, the GEONAV displays the navigation window in the screen upper part, and, in the bottom part, the sea depth in graphic form.

The depth value can be expressed in meters (selected by default), feet and fathoms; press PAGE to display the menu, select SETUP and then DEPTH UNITS (M/FT/FA).

Navigation mode (Automatic)

The GEONAV enters the Navigation mode as soon as the internal or external GPS receiver transmits a valid fix; when in Navigation mode:

- The manual cursor is not displayed
- The depth sounder window can be accessed

This mode is also called automatic because the unit automatically selects the chart scale and updates the boat's position on the screen.

Cursor mode (Manual)

When in Cursor mode, the manual cursor is displayed. It is possible to edit a route, insert or delete markers, display navaid infor-

mation etc., but it is not possible to gain access to the depth sounder window. By pressing one of the four arrows in the CURSOR key, the unit switches from Cursor to Navigation mode, and the screen is centered in relation to the manual cursor. To return to Navigation mode press PAGE.

Elite² Chart rotation

Charts are traditionally displayed in north-up mode. This, however, does not correspond to reality. For example, when traveling southwards, the chart shows, on the right side of the boat, what is actually located on the left side, and vice versa.

The Chart Rotation function allows rotating the electronic chart displayed according to the plotted route (COG - Course Over Ground) as detected by the GPS receiver. Since the COG value varies continuously, a filter has been inserted to prevent the chart from bouncing.

To activate the Chart Rotation function, press PAGE to display the menu, select SETUP, then CHART ROTATION and ON. A message will prompt the user to select the requested maximum range before activating the chart rotation. The northern direction will be indicated by the symbol 



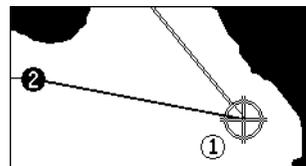
Without rotation



With rotation

Autozoom

With the Autozoom function the GEONAV will always display automatically the boat's position and the target waypoint at the best available chart range. As the boat approaches the target waypoint, the unit will automatically zoom in. Once the waypoint is passed, the unit will select the best range to display the boat's position and the following waypoint.



To activate the Autozoom function, press ZOOM+ until the "AUTOZOOM ? ENTER = YES" message is displayed.

To deactivate the Autozoom function press the ZOOM key once.

When the GEONAV is turned on, and if at least one waypoint has been previously entered, the Autozoom function is automatically activated.

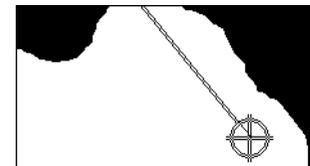
Screen Amplifier

This function automatically redraws the chart according to the boat's course, to maintain 2/3rds of the screen ahead of the boat, provided that the boat's speed is greater than 3 knots.

This function will be activated only if no waypoint has been previously inserted.



Without screen amplifier



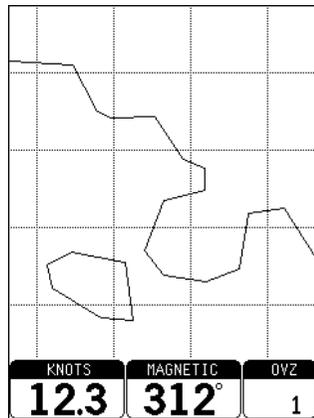
With screen amplifier

Overzoom

The Overzoom function allows the chart scale to expand anywhere up to 1/4 NM. The Overzoom does not provide any additional chart detail, but improves only the readability of the existing information, thus acting as a magnifying glass.

When the Overzoom is activated, the unit will warn the user by:

- Deactivating the land filling function
- Replacing RANGE with OVZ (blinking) within the navigation window



To activate/deactivate the Overzoom function, press PAGE until the menu bar is displayed, then select SETUP, OVERZOOM and ON/OFF.

Position calibration

Most position sensors have intrinsic errors that make the boat's position incorrect (from few meters to several hundred meters) with respect to the background display of the chart.

This error is caused by the principle at the root of the satellite-derived position system.

The position calibration allows the user to manually correct the position error present in all GPS. Press PAGE until the menu bar is displayed, select SETUP, CALIBRATION and then ON.

A message will prompt the user to move the cursor to the boat's true position by using the CURSOR key. Press ENTER to move the GPS boat's position to the point indicated by the cursor. This operation will save the calibration for use in future calculations.

NOTE: When the calibration is activated, the coordinates will be marked by (*) for safety purposes.

To cancel calibration, press PAGE until the menu bar is displayed, select SETUP, CALIBRATION and then OFF.

Local time

By this function the user can enter local time instead of the Greenwich time (GMT) supplied by the GPS receiver.

To enter local time, press PAGE until the menu bar is displayed, select SETUP, REFER. TIME and then LOCAL.

A window will allow entering local time by using the CURSOR key. Press ENTER to confirm the operation.

To cancel local time, press PAGE until the menu bar is displayed, select SETUP, REFER. TIME and then GMT.

Elite³ **Color**

The GEONAV is equipped with a 4-color screen that offers perfect visibility under sunlight. Green, white, blue and red are the colors available and cannot be modified.

- Earth red
- Sea white
- Menu, windows, nav aids, boat's position blue
- Tracks, waypoints green

Contrast/Brightness

Press the PWR key to display the CONTRAST/LIGHT window. To switch from one option to the other and to adjust the contrast/brightness level, press CURSOR. Press the PAGE key to exit.

The contrast can be adjusted at start-up, when the WARNING message appears or when the satellite window is displayed; press the ZOOM key and adjust the contrast.

OPERATION

At start-up the GEONAV displays a message warning the user that the electronic chart is a navigation aid designed to facilitate the use of authorized government charts, not to replace them.

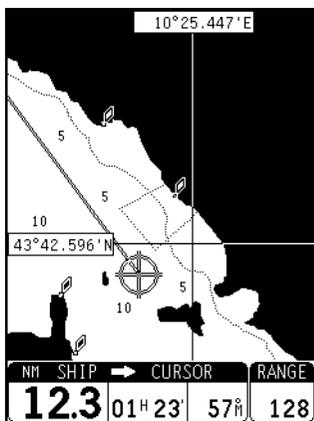
Press ZOOM to adjust the contrast, then PAGE to continue; the GEONAV will display the GPS information window.

The GEONAV is able to display five graphic windows: to switch from one window to another, press PAGE.

When the fix is valid, the window sequence is the following:

Plus² | **SATELLITES > NAVIGATION > MENU > NAVIG. TO WP > TRIP**

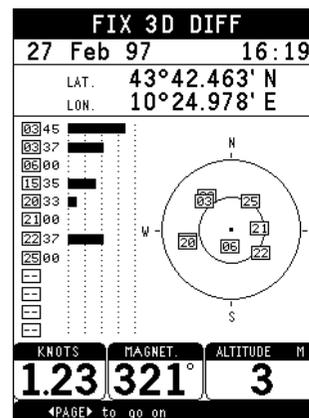
Elite² | **SATELLITES > NAVIGATION > MENU > DEPTH SOUNDER > TRIP**



By pressing CURSOR the GEONAV switches to Cursor mode, allowing the user to move freely within the seamless world of NAVIONICS charts. The screen will always be centered on the manual cursor; the window at the bottom of the screen displays the following data:

- Distance from the boat's position to the manual cursor
- Time to arrive to the manual cursor position (estimated with respect to the current boat's speed)
- Bearing from the boat's position to the manual cursor
- Chart range

SATELLITE WINDOW



At start-up the satellite window displays how many and which satellites are tracked by the GPS receiver.

The outer circle represents the horizon, the inner one identifies a 45° elevation with respect to the horizon, and the central circle points to the zenith.

The small squares with numbers show the satellites available.

When a satellite is tracked by the GPS receiver, the number inside the square is displayed in reverse.

The bars displayed on the left identify the signal quality; the longer the bar, the higher the signal quality. On the left of each bar two digits indicate numerically the signal quality relevant to that satellite. A value greater than 40 indicates a good signal quality.

Additional information:

- Day, month, year, local or Greenwich time (at the first start-up the GEONAV is initialized to Greenwich Time).
- Boat's position (lat/lon) (or the latest valid fix if the GPS is still searching for satellites).
- Data on current satellite situation (number and fix).
- SOG, COG and altitude.

The latitude and longitude values relevant to the boat's position are displayed as soon as three satellites are tracked and a 2D fix (two dimensions) is available.

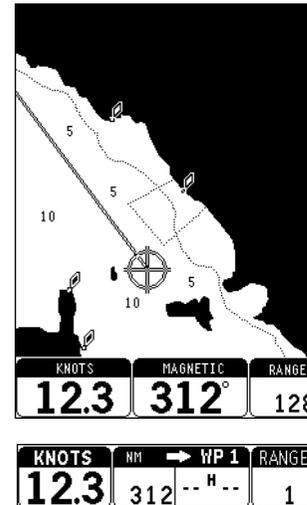
The altitude value is available only if four satellites are tracked and a 3D fix is obtained. As soon as a valid fix is available, the GEONAV will automatically switch to Navigation mode and display the boat's position at the best chart range available; the window at the bottom of the screen will indicate the boat's course, speed and chart range.

Since the GPS receiver is initialized in Italy, the time to get the first fix will depend on the areas you want to navigate in; within the Mediterranean Sea the GEONAV should get the first fix in less than 12 minutes, whereas in other parts of the world it can take up to 30 minutes.

Once the unit gets the first fix, the time for the following fixes is a few minutes.

Elite² | If the boat is in an area covered by a differential station, when the built-in antenna is used together with a DGPS, the top of the screen will display the "FIX 3D-DIFF" or "FIX 2D-DIFF" message.

NAVIGATION WINDOW



This window is activated automatically as soon as the GPS receiver has obtained the boat's position (FIX OK).

If no route is present, speed, course and chart range are displayed at the bottom of the screen.

By using the ZOOM key, the chart detail level can be increased, thus accessing NAVIONICS chart data.

If a route has been inserted, the screen will display the following data:

- Boat's speed
- Distance from the target waypoint
- Time to arrive to the target waypoint
- Chart range

MENU

The menu bar, displayed at the top of the screen, allows selecting from the following options:

TRACK ROUTE SETUP

TRACK: To activate/deactivate the track function and to delete a track saved.

ROUTE: To delete, reverse, store, recall a route and display route information.

SETUP: To activate/deactivate the plotter's setup.

Elite³**DEPTH SOUNDER WINDOW**

A depth sensor can be interfaced with the GEONAV via NMEA.

In this case, the GEONAV automatically enables the depth sounder function, displaying a graph of sea depth.

The depth scale, whose unit can be selected from the menu in meters, feet or fathoms, will change automatically to show deeper or shallower water.

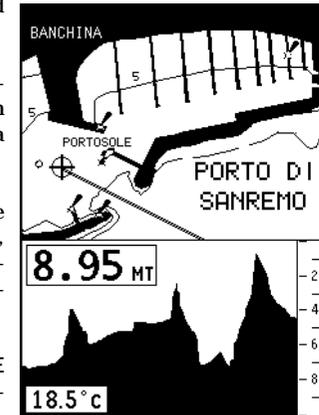
In Navigation mode, press PAGE until the depth sounder window appears.

The window will display the following data:

- Sea depth
- Depth scale
- Sea temperature (if available)

When navigating in waters deeper than sounder access range or if the boat's speed is too high for depth sounding, data acquisition will be interrupted and the number replaced by "—".

To deactivate the depth sounder window, press PAGE.



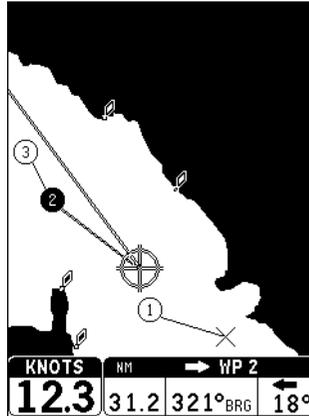
Plus²

NAVIGATION TO WAYPOINT WINDOW

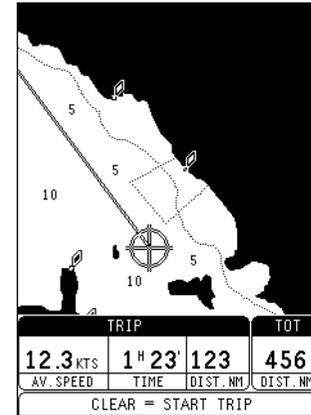
When the navigation to waypoint window is activated, the active route leg is temporarily deleted and replaced with a line constantly connecting the boat's position to the current target waypoint.

The window at the bottom of the screen displays the following data:

- Boat's speed
- Distance from the boat's position to the target waypoint
- Bearing from the boat's position to the target waypoint
- Steering angle



TRIP WINDOW



The trip window shows the data relating to the route followed and, in particular:

- Average speed
- Time elapsed from departure
- Partial distance covered
- Total distance covered

To reset partial counters before starting a new journey, press CLR.

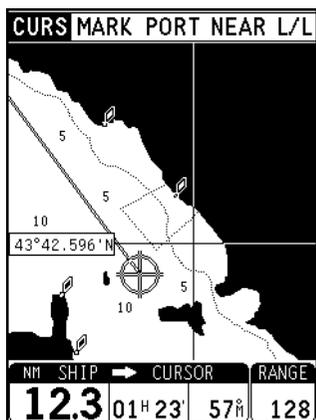
ROUTE

Creating a route

To create a route, insert at least one waypoint taking the boat's current position as a starting point. To insert one waypoint at any time, press GOTO and select one of the options displayed.

A waypoint will be inserted on the selected position and the route initially composed by a leg connecting the boat's position to the target waypoint selected. If you want to enter additional waypoints, press GOTO and select one of the options available; the new waypoint will be appended to the existing route.

To insert, move or delete waypoints (e.g. to go round obstacles or change the route plan), activate the route editing function (see the following pages).



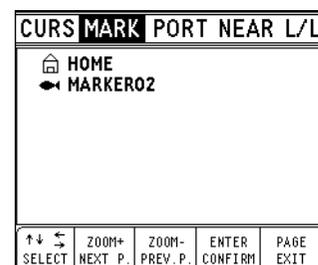
Route to the manual cursor position
Press CURSOR to enter the Cursor mode. Press GOTO, select the CURS option and press ENTER.

The GEONAV will insert a new waypoint in the cursor position and append a new leg to the existing route; if no waypoint had been previously entered, the leg will be connected to the boat's position.

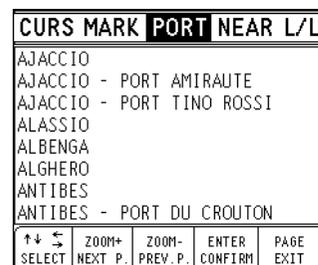
The GEONAV will automatically activate the Autozoom function as soon as it is switched to Navigation mode.

Route to a marker

Press GOTO and select the MARK option by the CURSOR key. The GEONAV will display the marker catalog (the latest 6 markers used will be highlighted at the top of the screen) thus allowing selecting the desired target marker. Select a marker and press



ENTER to confirm. The GEONAV will insert a waypoint in the marker position and will append the new leg to the existing route; if no route is available, the new waypoint will be connected to the boat's position. By pressing PAGE, the GEONAV will automatically activate the Autozoom function as soon as it is switched to Navigation mode.



Route to a port

Press GOTO and select the PORT option by the CURSOR key.

The GEONAV will display the port catalog (the latest 6 ports used will be highlighted at the top of the screen), thus allowing selecting the desired port.

Select a port and press ENTER to confirm the operation.

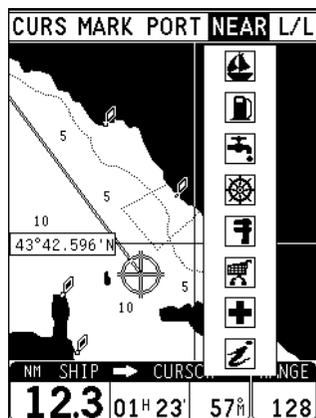
The GEONAV will insert a waypoint in the port position and will append the new leg to the existing route; if no route is available, the new waypoint will be connected to the boat's position.

By pressing PAGE, the GEONAV will automatically activate the Autozoom function as soon as it is switched to Navigation mode.

Route to the nearest service

NOTE: This option is available only with the NAVIONICS cartridges containing the Port Services feature.

Press GOTO and select the NEAR option by the CURSOR key; the GEONAV will display the port services catalog, thus allowing selecting the desired service.

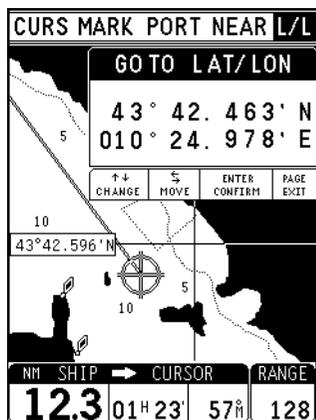


Select the desired service, press ENTER to confirm or PAGE to exit. The GEONAV will display the three ports nearest to the boat's position (if in Navigation mode) or to the manual cursor (if in Cursor mode) containing the selected service.

Press CURSOR to highlight one port at a time and check the relevant distance and time to arrive (estimated on the boat's current speed).

Press ENTER to confirm the selection.

The GEONAV will insert a waypoint in the port position and will append the new leg to the existing route, if in Cursor mode, or delete the existing route and create a new one if in Navigation mode; if no route is available, before activating the NEAR option, the new leg will connect the waypoint to the boat's position, if in Navigation mode, or to the manual cursor if in Cursor mode. The GEONAV will automatically activate the Autozoom function as soon as it is switched to Navigation mode.



Route to a point (Lat / Lon)

Press GOTO and select L/L by the CURSOR key.

Once the desired value has been entered, press ENTER to confirm.

The GEONAV will position the cur-

sor on the coordinates selected. To insert the waypoint, press GOTO once again, select the option CURS and then press ENTER to confirm the operation.

Deleting waypoints in a plotted route

In Cursor mode, it is possible to delete all waypoints by pressing CLR repeatedly until the "NO WP PRESENT" message appears.

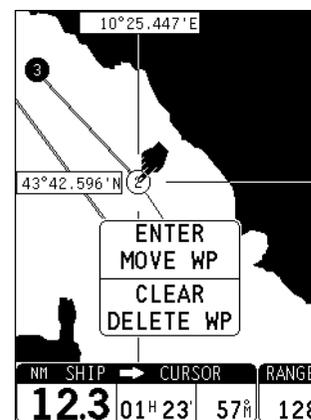
If the waypoint to delete is out of the screen (not displayed), the GEONAV will prompt the user to press ENTER to confirm.

Deleting the whole route

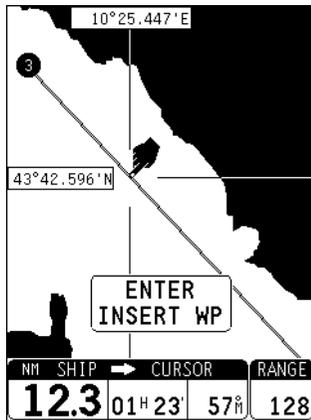
In Navigation mode, the whole route can be deleted by pressing CLR. Press ENTER to confirm the deletion or PAGE to exit.

Editing a route in Cursor mode

It is often necessary to change the position of a waypoint or to delete a single waypoint; the GEONAV allows carrying out these operations in a very simple way and with few keys.



- Deleting the waypoint selected
By the CURSOR key, position the cursor exactly on the waypoint to delete, then press CLR to carry out the deletion.
- Moving a waypoint
By the CURSOR key, position the cursor exactly on the waypoint to move, press ENTER to capture the waypoint, then move the waypoint to the position desired and press ENTER.



- **Inserting a new waypoint into the plotted route**
Position the cursor exactly on the route segment to modify, then press ENTER to capture the segment; once captured, the segment will be drawn with a thicker line to distinguish it more easily from the other route segments. Move the cursor to the desired position and press ENTER to enter a new waypoint.

Route functions available from the ROUTE menu

- Route information
- Reversing the route direction
- Storing the route
- Recalling the route
- Deleting the route

Route information

To display the navigation data of the plotted route, press PAGE repeatedly until the menu bar is displayed, select ROUTE and then the INFO option.

By pressing ENTER, the following information will be displayed:

Waypoint N.: Waypoint number
 Dist. NM: Distance between the current waypoint and the starting waypoint
 Time: Time of arrival to the next waypoint
 Fuel / Litre: Estimated fuel consumption

NOTE: Time and fuel consumption data is displayed only after the estimated values have been input through the appropriate menu.

Reversing the route direction

To reverse the route direction, press PAGE until the menu bar is displayed; select ROUTE, the REVERSE option and then press ENTER to confirm. The waypoint order will be automatically reversed and you will be able to navigate in the opposite direction.

Elite² Storing the route

To store the route, press PAGE until the menu bar is displayed; select ROUTE, the STORE option and then press ENTER to confirm. The route will be stored and disappear from the screen. Any route previously stored, if any, will be overwritten.

Recalling the route

To recall the route, press PAGE until the menu bar is displayed; select ROUTE, the RECALL option and then press ENTER to confirm. The route previously stored in memory will be recalled, thus replacing the route currently displayed. However, the route stored will not be erased from memory.

NOTE: Both the route stored and the route displayed are saved as the GEONAV is switched off.

Deleting the route

In Navigation mode, press CLR and then ENTER to confirm the deletion. In Cursor mode, hold CLR pressed for two seconds and then press ENTER to confirm the deletion.

TRACK

The Track function allows recording the boat's actual track. It is possible to activate and deactivate the track function several times during navigation; in this case, track segments will be automatically connected to each other to make one single track line.

Starting a track

To activate the Track function, press PAGE repeatedly until the menu bar is displayed; select TRACK, the START option, and then press ENTER to confirm the operation. A small circle will indicate the track starting point.

Stopping a track

To deactivate the Track function, press PAGE repeatedly until the menu bar is displayed; select TRACK, the STOP option, and then press ENTER to confirm the operation.

Deleting a track

To delete a track, press PAGE repeatedly until the menu bar is displayed; select TRACK, the DELETE option, and then press ENTER to confirm; a message will prompt the user to confirm the deletion by pressing ENTER.

MARKER

The GEONAV allows entering and storing small symbols (markers) to mark points of interest (e.g., submerged wrecks, fishing spots, etc.). Each marker can be assigned a symbol and an 8-character name.

**CURSOR MODE****Inserting a marker**

Move the cursor to the desired point and press ENTER. Select the desired marker shape and name and then press ENTER to confirm.

A new marker will be automatically entered at the position selected.

NOTE: Marker names are displayed starting from the 32NM chart range.

Deleting a marker

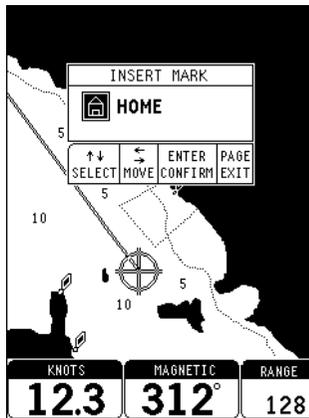
Position the cursor exactly on the marker to delete, then press CLR to confirm.

Modifying the shape and the name of a marker

Position the cursor on the desired marker; a window will display the shape and the name of the current marker.

Press ENTER to confirm the marker editing and use the CURSOR key to select the desired shape and name.

Press ENTER to confirm.



Route to a marker
See the Route functions.

NAVIGATION MODE

Inserting a marker

To enter a new marker, press **ENTER**; select the desired shape and name of the marker by the **CURSOR** key and then press **ENTER** to confirm.

A new marker will be automatically entered at the boat's position.

Deleting a marker

Position the cursor exactly on the marker to delete, then press **CLR** to confirm.

SETUP

The **SETUP** menu allows setting the available options.

To access the **SETUP** menu, press **PAGE** repeatedly until the main menu shows up, select the **SETUP** item, then use the **CURSOR** key to browse through the options and change the settings.

- Chart rotation (ON/OFF)
Enables / disables the chart rotation.
- Display maps (ON/OFF)
Enables / disables map boundaries.
- Depth contours (ON/OFF)
(equal to/below 5 meters; equal to 10 meters; equal to/above 20 meters)
Enables / disables the display of depth contours.
- Names (ON/OFF)
Enables / disables the display of geographical names.
- Overzoom (ON/OFF)
Enables / disables the Overzoom function.

TRACK	ROUTE	SETUP
CHART ROTATION		ON OFF
DISPLAY MAPS		ON OFF
DEPTH CONT. =< 5M		ON OFF
DEPTH CONT. = 10M		ON OFF
DEPTH CONT. =>20M		ON OFF
NAMES		ON OFF
OVERZOOM		ON OFF
CALIBRATION		ON OFF
DIST. UNITS	NAUT	METR STAT
DEPTH UNITS	M	FT FA
GPS	INT	EXT
REFER. TIME	LOCAL	GMT
BEARINGS	TRUE	MAG
LANGUAGE	EN	FR ES DE IT DK
↑↓ SELECT	↔ CHANGE	ENTER / PAGE EXIT

- Calibration (ON/OFF)
Allows entering the position calibration offset.
- Distance units (NAUT/METR/STAT)
Allows selecting distance units.
- Depth units (M/FT/FA)
Allows selecting depth units.
- Elite³* | • GPS (INT/EXT)
Allows selecting the internal GPS or an external antenna.
- Reference time (LOCAL/GMT)
Allows entering local time.
- Bearings (TRUE/MAGNETIC)
Allows setting the magnetic mode for all bearings.
- Language (EN/FR/ES/DE/DK/IT/SV/NL/SU/NO)
Allows selecting the language.

Elite³ | **AUTOPILOT**

The GEONAV allows a boat equipped with an autopilot to follow automatically the entered route, compensating for any diversion caused by external conditions (wind, currents, etc.).

The GEONAV will display the “PROXIMITY TO WAYPOINT” message to warn the user that the boat is about to reach the target waypoint.

The GEONAV will display the “END OF TRIP” message to warn the user that the boat is about to reach the last waypoint in the route.

IMPORTANT: In order to avoid sudden change of course, it is always recommended to deactivate the autopilot when editing and / or creating a route.

TROUBLESHOOTING

The GEONAV does not turn on

Make sure the unit is powered with a supply voltage between 11 and 18 VDC. Check the polarity of the power supply.

The GEONAV does not get any valid satellite fix

Make sure that no metal obstacle is positioned around the unit acting as a shield for the GEONAV antenna. If, after 15 minutes, the GEONAV has not got any valid fix yet, turn the unit off and on again.

The GEONAV does not turn off

If, after pressing PWR for at least 3 seconds, the unit does not turn off, remove the GEONAV from its bracket or turn the power off.

The GEONAV screen gets dark after a long exposure to direct sunlight

Press PWR to display the CONTRAST/LIGHT window, then adjust the contrast by pressing CURSOR.

The GEONAV does not respond to any command

Turn the unit off, then on again; if the problem persists, erase memory by turning the unit on while keeping CLR and PWR simultaneously pressed. This operation will delete all the data (markers, route, tracks, etc.) previously saved in memory.

TABLE OF CONTENTS

INTRODUCTION 4

CHARACTERISTICS 5

INSTALLATION AND PRECAUTIONS 9

CONNECTIONS 12

CARTRIDGE INSTALLATION 14

KEYBOARD 15

DIAGNOSTIC 16

NAVIONICS ELECTRONIC CHARTS 17

GRAPHIC ITEMS 21

FUNCTIONAL CHARACTERISTICS 23

OPERATION 28

SATELLITE WINDOW 29

NAVIGATION WINDOW 31

MENU 32

DEPTH SOUNDER WINDOW 33

NAVIGATION TO WAYPOINT WINDOW 34

TRIP WINDOW 35

ROUTE 36

TRACK 42

MARKER 43

SETUP 45

AUTOPILOT 47

TROUBLESHOOTING 48