



## COMPACT 7 Plus

*Gray Levels Chartplotter with Internal GPS Receiver and Antenna*  
CODE: S3igLZ7m 1001c884/220305

## EXCALIBUR 7 Speed

*Gray Levels Chartplotter with External GPS Receiver and Smart Antenna*  
CODE: S3egLZ7m 1001c884/220305

## COMPACT 7 Sun Color

*Sunlight Readable Display Color Chartplotter with Internal GPS Receiver and Antenna*  
CODE: S3igLZ7c 1001c844/220305

## EXCALIBUR 7 Speed Sun Color

*Sunlight Readable Display Color Chartplotter with External GPS Receiver and Smart Antenna*  
CODE: S3egLZ7c 1001c844/220305

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## USER MANUAL



# Warning!

Electronic charts displayed by the chartplotter are believed to be accurate and reliable, but they are not intended to replace official charts which should remain your main reference for all the matters related to the execution of a safe navigation.

For this reason we would like to remind you that you are required to carry on board and use the officially published and approved nautical charts.

## Caution

- Please read through this manual before the first operation. If you have any questions, please contact the Company's customer service or your local dealer.
- The chartplotter is not built water proof. Please give attention to avoid water intrusion into the chartplotter. Water damage is not covered by the warranty.
- Extensive exposure to heat may result in damage to the chartplotter.
- Connection to the power source with reversed polarity will damage the chartplotter severely. This damage is not covered by the warranty.
- The chartplotter contains dangerous high voltage circuits which only experienced technicians **MUST** handle.
- The **C-MAP C-CARD** are available from your local dealer.
- We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.
- Exposure of display to UV rays may shorten life of the liquid crystals used in your plotter. This limitation is due to the current technology of the LCD displays.  
Avoid overheating which may cause loss of contrast and, in extreme cases, a darkening of the screen. Problems which occur from overheating are reversible when temperature decreases.

## Cleaning procedure for the plotter screen

Cleaning your plotter screen is a very important operation and must be done carefully. Since the surface is covered by a antireflective coating, the procedure for cleaning all the surfaces can be performed using the following procedure: You need a tissue or lens tissue and a cleaning spray containing Isopropanol (a normal spray cleaner sold for the PC screen, for example PolaClear by Polaroid). Fold the tissue or lens tissue into a triangular shape, moisten the tip and use the index finger behind a corner to move the tissue across the surface, in overlapping side to side strokes. If the tissue is too wet, a noticeable wet film will be left in its path and you will need to repeat the process. If too dry, the tissue won't glide easily, and may damage the surface.

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# 1

# Introduction

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Congratulations on your purchase of the chartplotter!

If you have not used a position-finding instrument before and intend to use your chartplotter for navigating, we suggest you should read this User Manual and make sure you are familiar with its contents.

The User Manual is divided into three main parts. Chapter "Before You Begin" introduces you to the basic information to get you start using the chartplotter. Chapter "For the New User" should be read first to become familiar with your new instrument. Chapter "For the Experienced User" introduces the advanced features of the chartplotter.

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## 1.1 CONVENTIONS

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Throughout this user manual, the keys are shown in capitals letters enclosed between single inverted commas, for example 'MENU'.

Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' means: press the 'MENU' key, using the cursor key to select the Basic Settings menu, press 'ENTER', using the cursor key to select the Input/Output menu and then press 'ENTER'.

Terms and functions underlined, for example Target, are explained in the Appendix "Terms".

---

# 1.2 FEATURES

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The chartplotter is a computer specifically designed for nautical use but, more precisely, to ease and speed up all calculations, which so far have been done manually. If connected to a positioning instrument, the chartplotter displays the current position, the speed, and the heading of the boat and its Track. The user information like Waypoints, Marks and Tracks can then be stored on a User C-CARD and can be recalled at any time. On the screen are shown navigation data and cartographic information obtained from electronic charts of **C-MAP C-CARD**.

When the package containing the chartplotter is first opened, please check it for the following contents (if any parts are missing contact the dealer the chartplotter was purchased from):

- Quick disconnect bracket and its protective cover
- Chartplotter's protective cover
- User Manual

**Note** \_\_\_\_\_ **FOR COLOR CHARTPLOTTER**  
*Fuse 2 Amp. + fuseholder.*

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**Note** \_\_\_\_\_ **FOR CHARTPLOTTER WITH EXTERNAL GPS RECEIVER**  
*The package contains the following parts too: Flush mounting kit; Smart DGPS WAAS Receiver with cable 15 mt/45 feet.*

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**C-MAP C-CARD** (cartography data cards) are available through your local dealer. For additional information on C-MAP Cartography visit web site at [www.c-map.com](http://www.c-map.com).

## 1.2.1 SPECIFICATIONS

### 1.2.1.1Main Characteristics

#### Recordable Individual points

- User Points : 500
- Type of User Points : 16

#### Routes

- Routes : 25
- Max User Points per Route : 100

#### Tracking

- Tracks : 2
- Points per Track : 1000
- Step by Distance : 0.01, 0.05, 0.1, 0.5, 1, 2, 5, 10 Nm

- Step by Time : 1, 5, 10, 30 Sec, 1, 5, 10 Min

## **Cartographic Functions**

- Detailed Map by using **C-MAP C-CARD**
- Coordinates System (ddd mm ss, ddd mm.mm, ddd mm.mmm, UTM, OSGB, TD)
- Map Datum
- Display Mode (Full, Simple, Fishing, Low, Custom)
- Marine  
Names, Buoys ID, Nav-Aids, Light Sectors, Attention Areas, Tides & Currents, Seabed Type, Ports & Services, Tracks & Routes, Underwater Objects
- Depth  
Depth Areas, Depth Areas Min/Max, Rocks Min/Max
- Land  
Lan Elevation values, Roads, POIs
- Chart  
Lat/Lon Grid, Chart Boundaries, Value-Added data

## **Map Menu**

- Zoom Type
- Fonts & Symbols
- Perspective View
- Live Nav-Aids
- Map Orientation (North, Head, Course)
- Mixing Levels
- Safety Status Bar
- Palette
- Currents Prediction

## **Fix Functions**

- Fix Correction (manual and automatic)
- Position Filter
- Speed Filter
- Dead Reckoning
- Screen Amplifier
- Reset Total and Partial Trip
- Rolling Road Scale
- Fix Datum
- Compass Calibration
- Bearings True and Magnetic
- Variation user selectable
- Course Vector
- Static Navigation

- A-B-C-D Function

## **Report Functions**

- Depth window
- GPS Data page
- Navigation Data page
- Graphic Data page
- Depth Graph page (1/2 screen and 1/3 screen)
- About page

## **Special Functions**

- C-Link, C-Meteo and C-Staff
- Fish Finder capability if connected to Fish Finder Black Box
- Automatic Info
- Find (Ports Services, Ports, Tide Stations, Wrecks, Obstructions)
- Navigation to Destination
- Speed Unit (Mph, Kts, Km/h)
- Distance Unit (Km, Nm, Sm)
- Depth Unit (Ft, FM, Mt)
- Altitude Unit (Ft, FL, Mt)
- Temperature Unit (°C, °F)
- Alarms Handling  
Arrival Alarm, XTE Alarm, Anchor Alarm, Depth Alarm, Grounding Alarm,  
Grounding Alarm Range, Grounding Alarm Report
- MOB Function
- Simulation  
Speed, Heading,, Date, Time, Cursor Control, Simulation On/Off

## **Auxiliary Memory**

- User C-CARD 1/2/4 MB

## **Interface**

- 2 port I/O (only for chartplotter WITH Internal GPS Receiver)
- 3 ports I/O (only for chartplotter WITH External GPS Receiver)

### **1.2.1.2 Physical Characteristics**

#### **Chartplotter size (inch/mm)**

- Gray Levels/Color: see Par. 6.1 for the related picture

#### **Weight**

- Gray Levels: 800 g
- Color: 950 g

#### **LCD Display**

- Gray Levels: transreflective LCD (*active area 5.6"*)

- Color: Sun Light Viewable LCD (*active area 5.6"*)
- Resolution: 320 x 240 pixels

#### **Power consumption**

- Gray Levels: 5 Watt, 10–35 Volt DC
- Color: 7.5 Watt, 10–35 Volt DC

#### **Operating Temperature Range**

- From 0°C to 55°C (from 32°F to 131°F)

#### **Memory**

- Non volatile with battery back-up

#### **Keyboard**

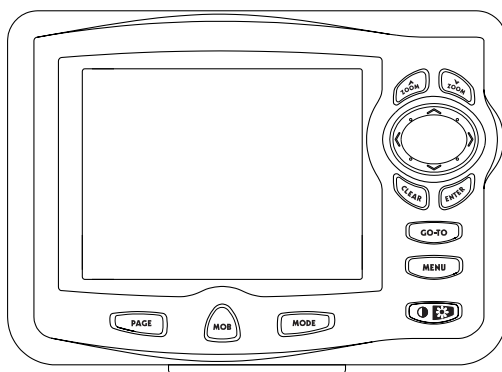
- Backlighted, silicon rubber

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## **1.3 BASICS**

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The chartplotter is controlled by using ten keys. There is also a cursor key to move a cursor across the screen. As you press a key, a single audio beep confirms the key action; every time the key pressed is not valid, three rapid beeps sound indicates that no response is available.



*Fig. 1.3 - The chartplotter*



# 2

## Before You Begin

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This chapter provides basic information to get you start using the chartplotter; it will help you to become familiar with the chart display and the functions of the controls before you start using the chartplotter.

---

### 2.1 THE KEYBOARD

---

The  'CONTRAST'/'BACKLIGHT'/'POWER' key

Press and hold the right side of 'POWER' for 1 second to turn the chartplotter On. Press and hold the right side of 'POWER' down (once the chartplotter has been turned On) for 3 seconds turns the chartplotter Off.

Press and immediately release the right side of 'POWER' to adjust the back-light, press and immediately release the left side of 'POWER' to adjust the contrast of the display.

The  key

Press 'MENU' to select the Functions Menu.

The  key

Place the cursor and press 'GO-TO' to set Target.

The  key

Press 'PAGE' to select the configuration you wish among cartography and text area in two different modes (text area on the right side or on the bottom line of the screen, full screen if Target has been inserted or with partial information on SOG), only cartography, Depth Graph 1/2 screen and 1/3 screen pages, GPS Data page, Navigation Data page, Graphic Data page.

The  key

Press 'MODE' to set the Navigate mode (Home)

### The key

Press 'MOB' to set MOB (Man OverBoard). When MOB is activated, press 'MOB' to delete it.

### The key

Press 'CLEAR' to exit from menu or to leave a menu without making changes. In Basic Mode deletes the A, B, C, D points, the User Point (Mark, Event, Waypoint), the MOB, the Target identified by the cursor.

### The key

Press 'ENTER' to select the desired option, to confirm selection; in Basic Mode places A, B, C, D points on the cursor coordinates, in Advanced Mode creates Objects (Mark, Event, Waypoint, A-B-C-D).

### The cursor key

The cursor key moves the cursor about on the display screen, quickly and accurately. It also scrolls the desired option in the menu page(s). If in Navigate (Home) mode, it allows to exit from Navigate mode.

### The and keys

Press 'ZOOM IN' shows more details of a smaller area, by changing the chart scale and zooming in on your display. Press 'ZOOM OUT' to operate similarly to the 'ZOOM IN', except in reverse, changing the scale and showing a wider, otherwise less detailed view.

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## 2.2 TURNING THE CHARTPLOTTER ON AND OFF

---

Before powering On the chartplotter, check for the correct voltage (10-35 volt dc, see Par. 6.3) and the correct connections with the positioning instrument (see Par. 2.5).

### 2.2.1 TURNING ON

Press and hold the right side of 'POWER' for 1 second. The chartplotter



emits one rapid beep sound and a title page is opened.

After a few seconds, the first of the two Caution Notice pages is displayed, reminding you that the chart plotter is only an aid to navigation, and should be used with appropriate prudence. The electronic charts are not intended to substitute for the official charts. Then the cartographic screen is displayed.

### 2.2.2 TURNING OFF

Press the right side of 'POWER' and hold for 3 seconds: a countdown timer appears on the screen, if you release the key before the countdown timer reaches zero, the chart plotter will remain On.

---

## 2.3 CHANGING KEYPAD BACKLIGHT AND CONTRAST

---

Press and immediately release the right side of 'POWER' (do not press and hold the key, or the "power-off" message will be displayed!): the backlight increases. Repeat this operation the backlight decreases.

Press and immediately release the left side of 'POWER': the contrast increases. Press and immediately release the left side of 'POWER' the contrast decreases. In other words, first pressure of the key will increase the value till you keep it pressed, next pressure of the key will decrease the value till you keep it pressed.

### **Warning!!!**

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*At low temperatures the CCFL backlight may not glow properly. allow a few minutes to warm up.*

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## 2.4 SELECTING THE LANGUAGE

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It is possible to select the language in which you wish information to be displayed (for screen labels, menus and options, but it is not affect the map information). The default setting is Italian.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "LANGUAGE" + 'ENTER'  
Choose the language you want and press 'ENTER' to confirm.

---

## 2.5 EXTERNAL CONNECTIONS

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### 2.5.1 GPS CONNECTION

#### **FOR CHARTPLOTTER WITH EXTERNAL GPS RECEIVER**

Connect the GPS to the Port 3: see the picture in Fig. 2.5.1.

Control the input setting following the procedure:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 3 INPUT" + 'ENTER' + "NMEA-4800-N81-N" + 'ENTER'

The GPS can be connected also to the Port 1 and 2, in this case select NMEA0183-4800-N81-N on the used port.

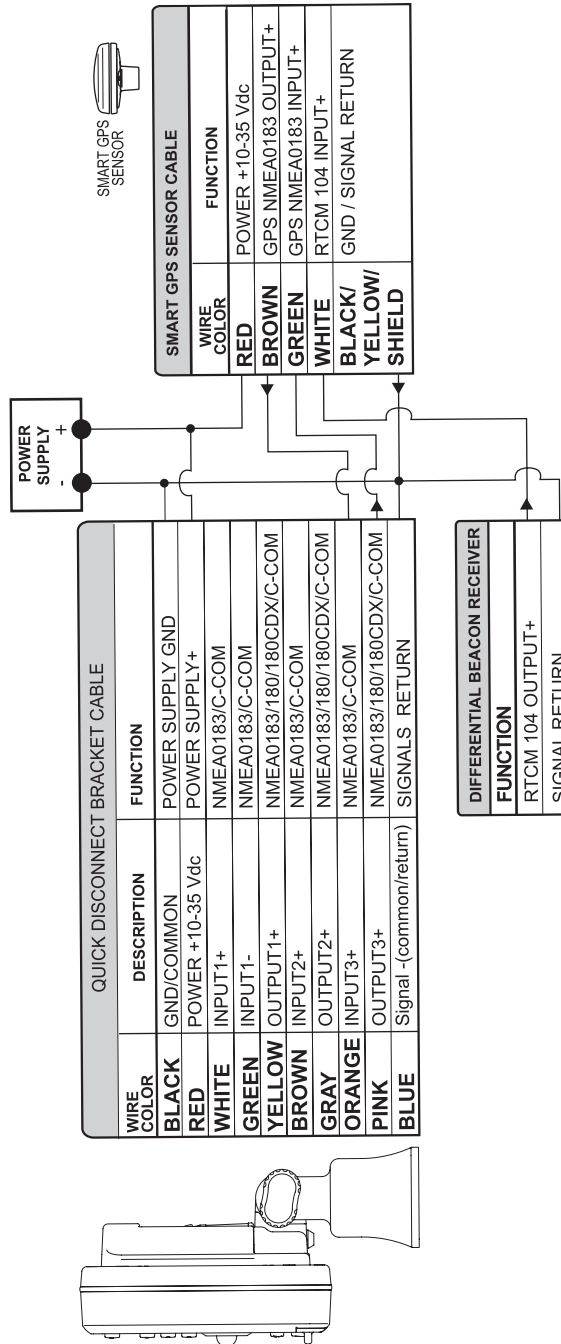


Fig. 2.5.1 - GPS Connection on Port 3

2.5.2 AUTOPILOT CONNECTION

To connect the Autopilot to the Port 2 see the following picture:

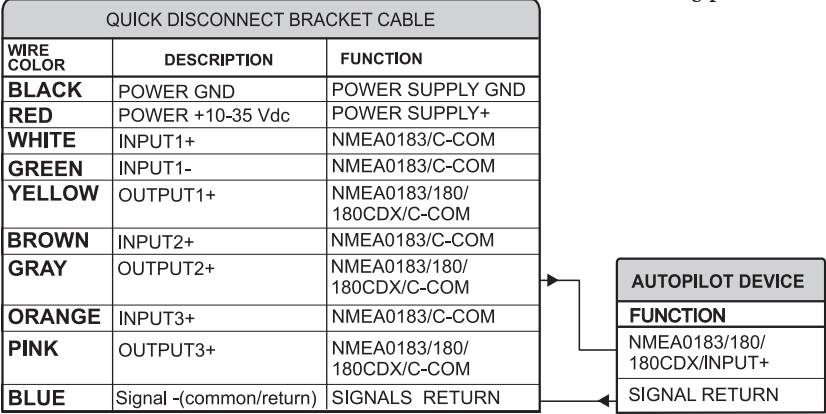


Fig. 2.5.2a - Autopilot Connections on Port 2

- To choose your preferred setting follow the procedure:  
'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 2 OUTPUT" + 'ENTER'

Then choose your preferred setting among the NMEA available settings NMEA 0183 4800-N81-N, NMEA 0180, NMEA 0180/CDX (the default setting is NMEA 0183 4800-N81-N) and press 'ENTER' to confirm.

The autopilot can be connected also to the Port 1 and 3, in this case select the output format on the used port.

2.5.3 EXTERNAL NMEA CONNECTION

To connect the External NMEA to the Port 1 see the following picture:

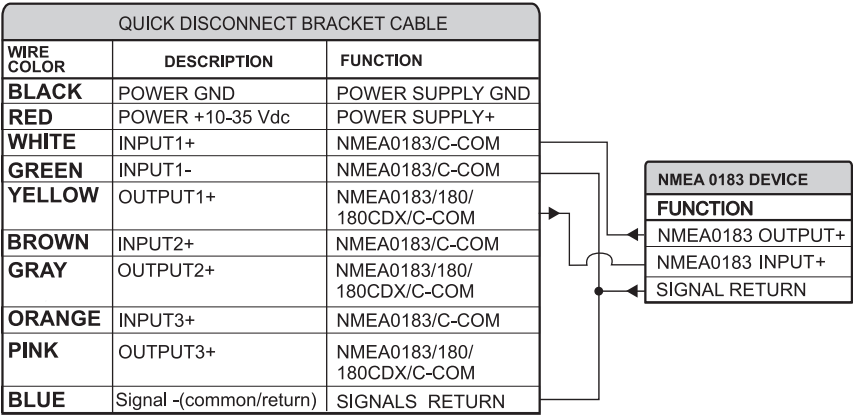


Fig. 2.5.3 - External NMEA Connections on Port 1

- To choose your preferred setting follow the procedure:
- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1 INPUT" + 'ENTER'

Then choose your preferred setting among the NMEA available settings NMEA 1200-N81-N, NMEA 4800-N81-N, NMEA 4800-N82-N, NMEA 9600-O81-N, NMEA 9600-N81-N (the default setting is 4800-N81-N) and press 'ENTER' to confirm.

An NMEA device can be connected also to the Port 2 and 3, in this case select the format on the used port. Doing connection remember that only the Port 1 is optoisolated in input.

## 2.5.4 C-COM GSM PLUS CONNECTION

To connect the modem C-COM to the chart plotter with quick disconnect bracket follow the procedure:

1. Cut the C-COM cable about 5 cm from the "T" connector:

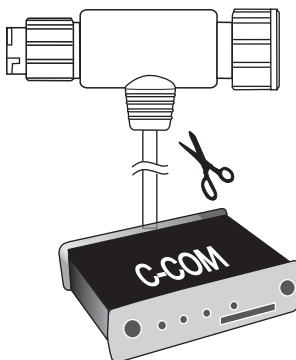


Fig. 2.5.4 - C-COM cable

2. Connect the wires to the quick disconnect bracket cable as follows:

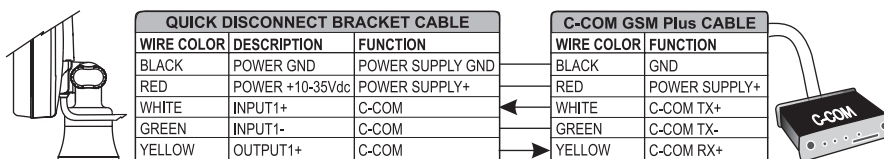


Fig. 2.5.4a - Connection for the Port 1

### Note

The connection is valid for the C-COM IR and C-COM RS232 too.

3. Set the C-COM for Port 1 as follows:
- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1 INPUT" + 'ENTER' + "C-COM" + 'ENTER'

The C-COM can be connected also to the Port 2 and 3, in this case select the format on the used port.

## 2.5.5 BEACON RECEIVER CONNECTION

### 2.5.5.1 For Chartplotter with External GPS Receiver

To connect a Differential Beacon Receiver see Fig. 2.5.1.

### 2.5.5.2 For Chartplotter with Internal GPS Receiver

To connect a Differential Beacon Receiver see the following picture:

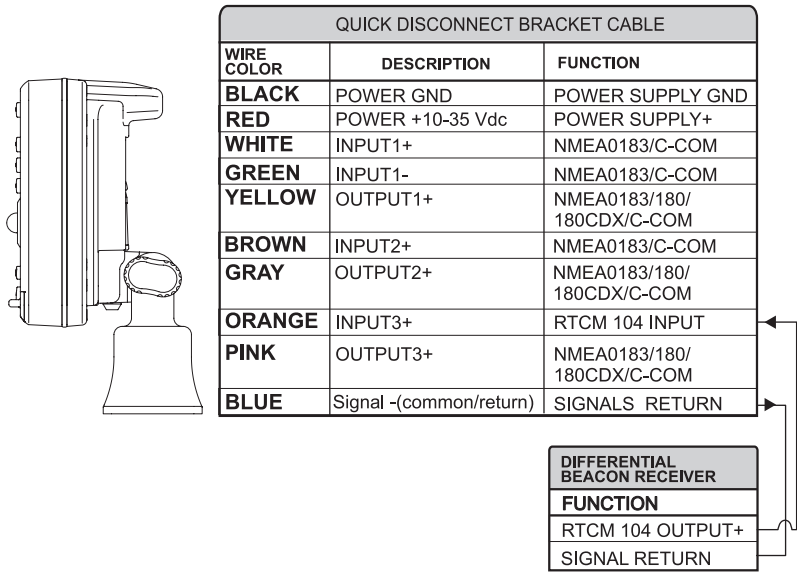


Fig. 2.5.5.2 - Beacon Receiver Connection

## 2.6 ADDITIONAL C-CARDS

The chartplotter uses two types of C-MAP cartridges: either a chart cartridge

or a data storage cartridge. A chart cartridge, called C-CARD, contains detailed charts of the area covered. A data storage cartridge, called User C-CARD can be used to permanently store your routes, Waypoints, Marks, Events and tracks.

**Note**

*During normal operations the C-CARD should not be removed since the chart plotter may lock up.*

## 2.6.1 INSERTING C-CARD

Hold the C-CARD by the short inclined side so that you can see the C-MAP label.

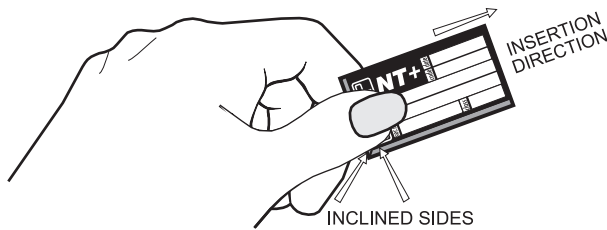


Fig. 2.6.1 - Inserting C-CARD (I)

Gently push the C-CARD into one of the two slots (1); push the C-CARD in as far as it will go, then move it to the bottom (2) to hold fixed into the slot (3).

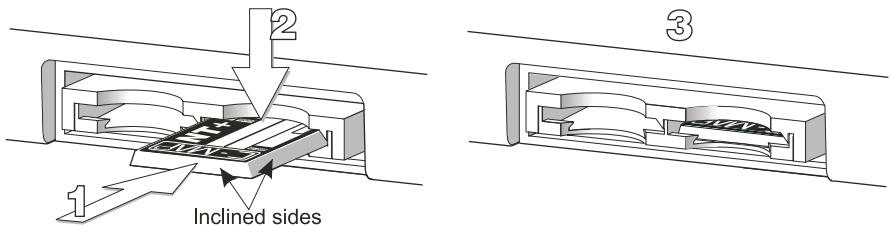


Fig. 2.6.1a - Inserting C-CARD (II)

## 2.6.2 REMOVING C-CARD

Press lightly the C-CARD you wish to remove (1) and move it to the top (2) until you hear a click: the C-CARD will ejected out of the slot (3).

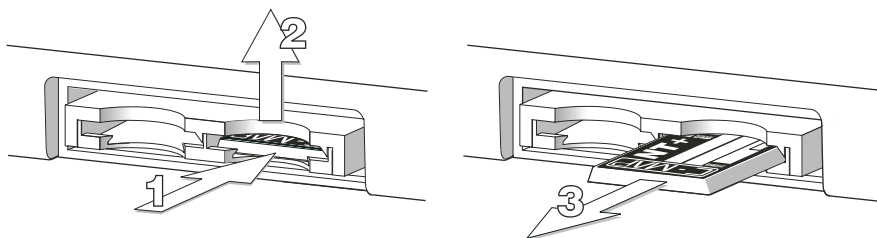


Fig. 2.6.2 - Removing C-CARD

### Note

*C-MAP is continuously creating new charts and revising old ones. If you wish to receive information on the newest available charts, you can write for the catalog of available C-MAP C-CARD at your dealer.*

## 2.7 MENU OPTIONS

You may select how the chartplotter displays primary information (such as how time is displayed) from the main Menu. Refer to Chapter 5 for more information.

- 'MENU'

## 2.8 DATA ENTRY

Information is keyed into the chartplotter when editing a Waypoint, entering a Route or using the Fix Correction functions. When the field is highlighted:

- Enter or edit data by pressing up/down cursor key to step through the available characters until the preferred character is displayed.
- Press right cursor key to move the cursor to the right.
- Use left cursor key to move the cursor to the left.



# 3

## For the New User

---

In order to get started using your chartplotter, you must do the following things:

1) Your chartplotter must have been installed properly according to the installation instruction on Par. 6.2.

2) You must have performed the proper settings for use with your positioning instrument (see Par. 2.5 and 2.6) and inserting the C-CARD for navigating in area you wish (see Par. 2.7).

3) You must have Power On to the chartplotter and adjust the brightness and contrast of the display (see Par. 2.2 and 2.3).

Once this is done, you can use your chartplotter for navigation.

---

### 3.1 SCREEN DISPLAY CONFIGURATION

---

The screen display can be shown in different modes (wrap around) among cartography and text area in two different modes (text area on the right side or on the bottom line of the screen, complete if Target has been inserted or with partial information on SOG), only cartography, Depth Graph 1/2 screen and 1/3 screen pages, GPS Data page, Navigation Data page, Graphic Data page. To select the configuration you wish:

- 'PAGE' more times

#### 3.1.1 CHARTS AND TEXT AREA

The charts and text area can be shown in two different modes. The first is with text area on the right side of the screen:

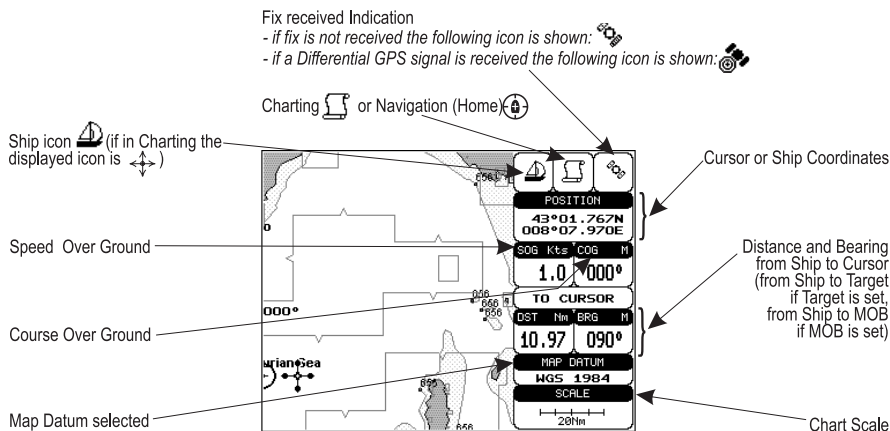


Fig. 3.1.1 - Charts and text area

The second is with text area on the bottom line of the screen (with partial information on SOG):

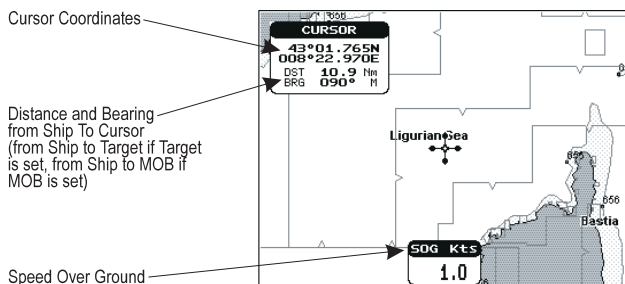


Fig. 3.1.1a - Charts and text windows

If Target is set, in the previous Fig. 3.1.1a instead of the only SOG information window, a text line with DST, BRG, XTE, SOG and TTG information appears.

Then it is possible to see on the screen only charts:

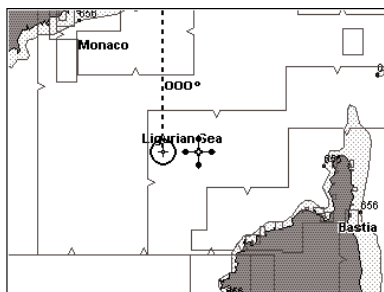


Fig. 3.1.1b - Full charts

### 3.1.2 DEPTH GRAPH

The Depth graph can be shown in two different modes. Depth graph displayed only on 1/3 of the screen:

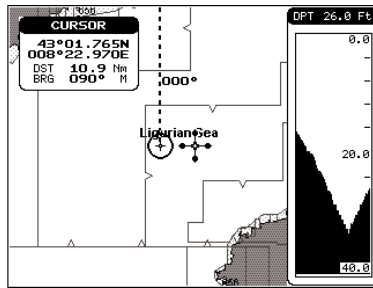


Fig. 3.1.2 - The Depth Graph 1/3 of the screen

or Depth graph displayed on 1/2 of the screen:

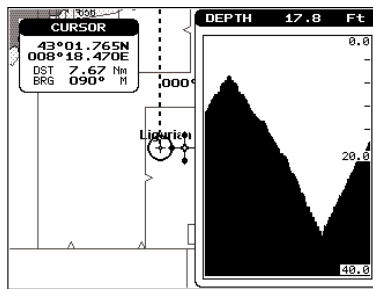


Fig. 3.1.2a - The Depth Graph 1/2 of the screen

### 3.1.3 GPS DATA PAGE

The GPS Data page shows in graphic mode GPS data.

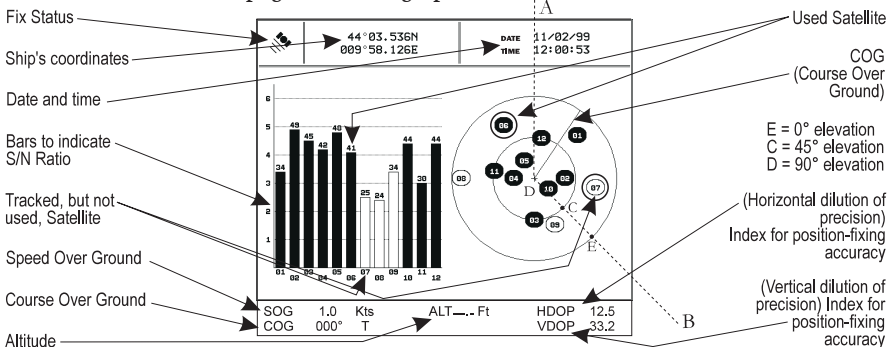


Fig. 3.1.3 - GPS Data Page

On the right side of the screen (see Fig. 3.1.3), there is a polar representation of the azimuth and elevation of each satellites. The circle contains a number indicating the PRN of the satellite and it is filled when it is used for the fix solution. On the left side there are histograms indicating the S/N ratio (SNR). The bar is filled when the satellite is used for solution. As example, the satellite with PRN=10 is used for solution with S/N=44, Azimuth=127degree and Elevation=70degree. When a valid fix is received, the Lat/Lon, Date, Time, Altitude, VDOP, HDOP, SOG and COG are shown in the page.

3.1.4 NAVIGATION DATA PAGE

The Navigation Data page shows information about speed (SOG) and course (COG) of the ship, status of the received signal, ship's coordinate and other general information.

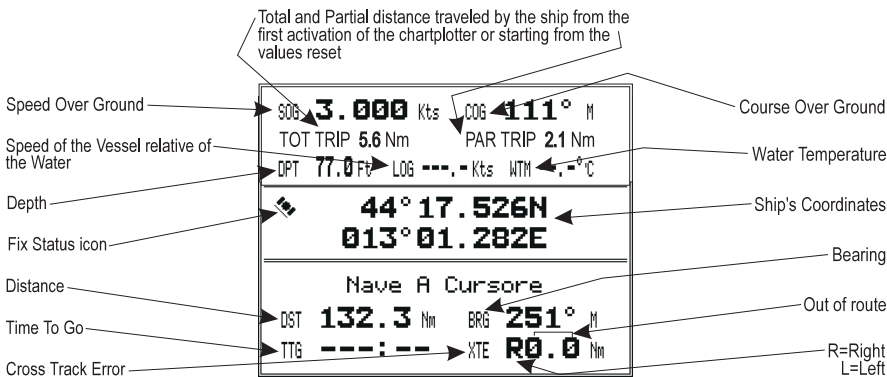


Fig. 3.1.4 - Navigation Data Page

3.1.5 GRAPHIC DATA (ROLLING ROAD) PAGE

The Graphic Data Page shows in graphic mode navigation data.

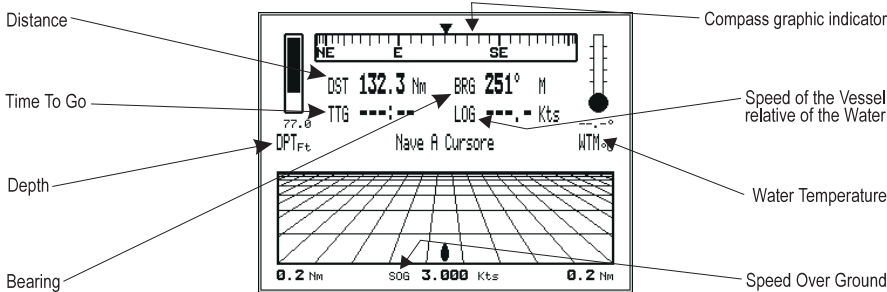


Fig. 3.1.5 - Graphic Data Page

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## 3.2 BASIC SETTINGS

---

The Basic Settings Menu provides access to the set up functions. Here you can choose the language you want (see Par. 2.4).

- 'MENU' + "BASIC SETTINGS" + 'ENTER'

### 3.2.1 COURSE VECTOR

Disables (Off) or sets time as : 2, 10, 30 min, 1, 2 hours, Infinite. The default setting is Infinite.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "COURSE VECTOR" + 'ENTER'

### 3.2.2 SCREEN AMPLIFIER

The Screen Amplifier function allows, when it is On and Home mode is set, to place map on the screen related to the fix position and direction, so the map shown is that before the ship. The default setting is On.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "SCREEN AMPLIFIER" + 'ENTER'

### 3.2.3 ADVANCED FUNCTIONS

The chartplotter can operate in two different modes: Advanced Mode and Basic Mode. In Advanced Mode it is possible to have more available functions, otherwise in Basic Mode there is a restricted number of functions (see Chapter 4). When Advanced Functions is On the chartplotter works in Advanced Mode, otherwise when it is Off the chartplotter works in Basic Mode. The default setting is Off.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER'

### 3.2.4 USER POINTS

Turns On/Off/Icon the displaying of the User Point Name. The default setting is On.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

### 3.2.5 DEPTH WINDOW

Turns On/Off the displaying of the Depth Window on the screen. The default setting is Off.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "DEPTH WINDOW" + 'ENTER'

### 3.2.6 UNITS SELECTION

Allows to select the preferred unit for Distance, Speed, Depth and Altitude (altitude of GPS Antenna on the medium sea level).

**Speed:** Kts(knots)/Mph(miles per hour)/Kph(chilometres per hour). The default setting is Kts.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "SPEED" + 'ENTER'

**Distance:** Nm(Nautical Miles)/Sm(statute miles)/Km(chilometres). The default setting is Nm.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "DISTANCE" + 'ENTER'

**Depth:** Ft(Feet)/FM(Fathoms)/Mt(Meters). The default setting is Ft.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "DEPTH" + 'ENTER'

**Altitude:** Ft(Feet)/FL(Flight Level)/Mt(Meters). The default setting is Ft.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "ALTITUDE" + 'ENTER'

**Temperature:** °C/°F. The default setting is °C.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "TEMPERATURE" + 'ENTER'

### 3.2.7 NAV AIDS PRESENTATION

Allows to set the Nav Aids presentation as US or INTERNATIONAL. The default setting is INTERNATIONAL. When selected it affects Lights, Signals, Buoys & Beacons display.

- **INT(International):** Draws Nav-Aids using international symbology. All components of Complex Objects are shown.

- **US:** Draw Nav-Aids using NOAA symbology. All components of Complex Objects are shown.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "NAV AIDS PRESENTATION" + 'ENTER'

### 3.2.8 INPUT/OUTPUT MENU

#### 3.2.8.1 Port 1/Port 2/Port 3 Input

Sets or disables the format for the navigation data input serial Port1/2/3. The default setting is NMEA-0183 4800-N81-N. For example to set the Port 2 as NMEA-0183 (4800 Baud Rate, Parity None, 8 Bits Number, 1 Stop Bit and Normal Polarity) you must select:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 2 INPUT" + 'ENTER' + "NMEA-0183 4800-N81-N" + 'ENTER'

---

#### Note

*The option C-COM defines on which Port (both Input and Output) the C-COM modem is connected. It is important to remark that this setting affects the Input and the Output of the selected Port. C-COM can only be set on one Port at time. If C-COM was already assigned to a Port and the user tries to set the C-COM to another Port, the chart plotter will show a message that warns the user about the current settings and asks if the new settings must overwrite the previous ones.*

---

### 3.2.8.2 Port 1/Port 2/Port 3 Output

Sets or disables the output interface. The default setting is NMEA-0183 4800-N81-N. For example to set the Port 2 as NMEA-0180 you must select:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 2 OUTPUT" + 'ENTER' + "NMEA-0180" + 'ENTER'

---

#### Note

*Selecting NMEA-0180 or NMEA-0180CDX the chart plotter shows a message to advise the user that the related input will be disabled.*

---

### 3.2.8.3 Port 1/Port 2/Port 3 NMEA Output Messages Selection

The chart plotter allows customizing the NMEA-0183 sentence transmitted on each port. The default setting is GLL, VTG, XTE, RMB, RMC, APB On and BOD, BWC, RMA, WCV, GGA, HSL, HDG Off.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3 OUTPUT SENTENCES" + 'ENTER'

### 3.2.8.4 GPS Setup Menu

It is possible to set the your preferred configuration for the connected GPS.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER'

---

#### Note

*This item is shown alternately to the selection of the output messages when to the related port is connected a GPS identifiable by the chart plotter.*

---

#### Internal GPS

FOR CHARTPLOTTER WITH INTERNAL GPS RECEIVER

Enables (On) or disables (Off) the Internal GPS. The default setting is On.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "INTERNAL GPS" + 'ENTER'

#### Restart GPS

Restarts all GPS processes. Once executed, the message "Done" is shown.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "RESTART GPS" + 'ENTER'

### Differential Correction Source

Allows setting what kind of Differential Correction will be used by the GPS between WAAS-EGNOS and RTCM (beacon correction). The default setting is WAAS-EGNOS.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "DIFF CORRECTION SOURCE" + 'ENTER'

### Navigation Speed

Allows setting the Navigation Speed among Low Speed, Medium Speed and High Speed.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "NAVIGATION SPEED" + 'ENTER'

### 3.2.8.5 Send & Receive Marks/Routes

Sets the desired port used for transferring User Points and Routes functions:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "SEND/REC ROUTES & MARKS" + 'ENTER' + "Port1/Port2/Port3" + 'ENTER'

### 3.2.8.6 C-Link

Selects the Master unit (Primary Station) or the Slave unit (Secondary Station):

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secondary Station/Primary Station" + 'ENTER'

### 3.2.8.7 Cable Wiring Page

Shows a window containing the interface cable wiring. See Par. 6.3 and 6.4.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "CABLE WIRING" + 'ENTER'

## 3.2.9 C-VOICE MENU

AVAILABLE IF THE CHARTPLOTTER IS CONNECTED TO THE VOICE NAVIGATION SYSTEM  
FOR MORE DETAILS SEE YOUR LOCAL DEALER

The chartplotter has two different vocal modes, Navigation and Echosounder. According to what mode is selected the messages spoken from the chartplotter are different.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "C- VOICE" + 'ENTER'

### 3.2.9.1 Navigation

Enables (On), disables (Off) or insert the time (2, 5, 10, 15 minutes) for the Navigation Voice mode. If it is On, the message is always sent, as fast as possible. Instead if it is one among the available values, for example 2 minutes, the message is sent related



to the selected time, in the previous example every two minutes.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "C- VOICE" + 'ENTER' + "NAVIGATION" + 'ENTER'

### 3.2.9.2 Echosounder

Enables (On) or disables (Off) the Echosounder Voice mode. If it is On, the Depth message is spoken. The message is spoken if a valid depth data is received by the chartplotter or if it is in Simulation mode. The default setting is Off.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "C- VOICE" + 'ENTER' + "ECHOSOUNDER" + 'ENTER'

### 3.2.9.3 Output Port

Selects the Output Port for the Voice function. The default setting is Port 1.

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "C- VOICE" + 'ENTER' + "OUTPUT PORT" + 'ENTER'

---

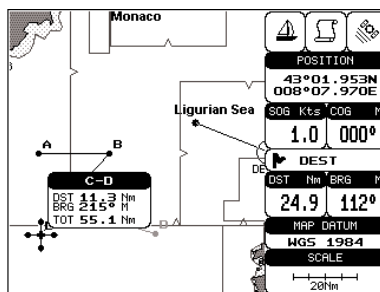
## 3.3 A-B-C-D FUNCTION

---

The A-B-C-D function allows you to create the A, B, C, D points and to delete them.

### 3.3.1 INSERTING THE A-B-C-D POINTS

Place the cursor on the desired position and press 'ENTER': on the screen the A point and an information window on A appear. Move the cursor and press 'ENTER' again: the B point appears, connected to A with a straight segment; an information window on A-B segment (distance (DST), bearing (BRG) and total distance from the first point) appears. Moving the cursor and pressing 'ENTER' places the C and D points:



*Fig. 3.2.1 - A-B-C-D points*

### 3.3.2 DELETING THE A-B-C-D POINTS

Place the cursor on the desired point (A, B, C or D) and press 'CLEAR': the point is deleted. When the point is deleted, the cursor is placed on the previous point, if existed. The labels of the next points are renamed.

### 3.3.3 NAVIGATING ON THE A-B-C-D POINTS

If fix received is good, place the cursor on the desired point A, B, C or D and press 'GO-TO'. When the ship arrives to the Destination point, navigation follows to the next point (if existed).

---

## 3.4 NAVIGATING TO A SINGLE DESTINATION

---

### 3.4.1 DISTANCE AND BEARING TO TARGET

Once you have positioned the cursor on your desired location (a generic point on the map) press 'GO-TO'.

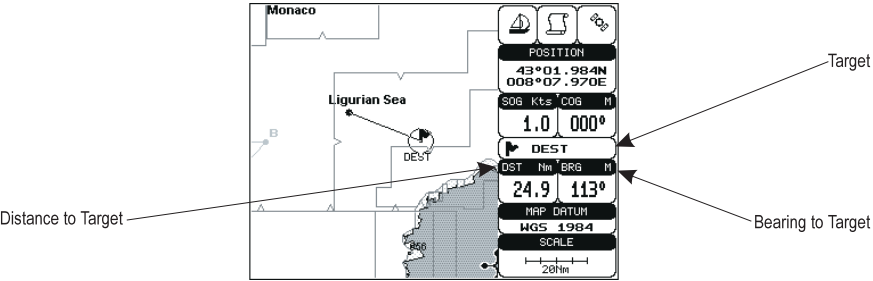


Fig. 3.4.1 - Navigation to a single destination

On the screen is shown a straight line connecting the Target (called DEST) with the ship's position and an information window with Target position, that disappears when the cursor is moved from the Target. When the Target is placed, all navigation data are referred to this Target.

**Note**

*When the chartplotter is turned Off, the Target does not remain in memory.*

### 3.4.2 TIME TO GO

When the Target is set the TTG value is displayed in the Graphic Data page and in the Navigation page:

- 'PAGE' more times

---

**Note**

*If SOG value is less than 1.0 knots or the BRG is greater than 90 degrees, the TTg value is not displayed.*

---

### 3.4.3 DELETING TARGET

Press cursor on Target icon, press 'CLEAR': the symbol identifies Target disappears from the screen.

Otherwise (when the cursor is placed in a generic position on the chart) press 'GO-TO'. A window appears to advise that the Destination is present: select the item "STOP" and press 'ENTER', the symbol identifies Target disappears from the screen.

---

**Note**

*If you select the "START" item and press 'ENTER', the Target icon is moved on the new cursor position.*

---

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## 3.5 C-MAP NT MAX INFORMATION

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MAX is a major evolution of the NT/NT<sup>+</sup> product technology. Key points are:

### **New Data Features**

- Tides and Currents (intuitive arrows show direction and strength)
- World Background Charts with terrestrial data
- Value Added Data (Pictures and Diagrams, Land Data)
- Enhanced Port Info

### **New Presentation Features**

- Clear View (advanced legibility techniques providing more chart data on the screen)
- Clear Info (sophisticated "Human Dictionary" to translate Nav-Aid abbreviations found on paper charts)
- Dynamic Fonts and Symbols
- Dynamic Nav-Aids (an innovative and dynamic presentation mode)
- Flexi-Zoom (increased Under and Over Zoom between chart levels, resulting in optimal scale display for any situation)
- Dynamic Elevation Data (optimised palettes for chart plotters with 256 or more colors; includes new NOAA palette for US market)

- Perspective View ("Real World" perspective view of the chart, updated realtime during navigation)

this mode is set the maps are displayed in order to use colors as similar as possible to the ones used in the original paper charts. **Classic** uses more vivid colors. **Night Vision** is recommended when the environment is dark in order to reduce the glare of the display. The chartplotter displays maps and screen in darker colors. **Sunlight** is designed to enhance the visibility of the screen when the chartplotter is exposed to the sunlight. The maps are much brighter than in the other modes and the depth areas are filled with white color so different depth areas are not easily distinguishable. NOAA allows setting NOAA paper chart colors presentation.

### 3.5.1.3 Map Orientation

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Map Orientation" + 'ENTER'

Selects the orientation of your chart according to: North (the map is shown with North upwards), Head (the map is shown with the ship's current heading upwards), Course (the map is displayed with the currently selected course leg upwards). The default setting is North

It is possible to select the resolution angle for the Map Orientation.

### 3.5.1.4 Zoom Type

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Zoom Type" + 'ENTER'

This feature allows more expansions or compression of the chart scale while zooming in or out. Zoom Mode has two options; STANDARD (default) or FLEXI-ZOOM. When in FLEXI-ZOOM mode, a short 'ZOOM...' push causes a change of chart, whilst a long 'ZOOM...' push (press and hold) causes a pop-up window to be displayed on a corner of the screen. The window shows the current Zoom Factor.

By pressing 'ZOOM IN'/'ZOOM OUT' the map is expanded or compressed according to the zoom factor selected.

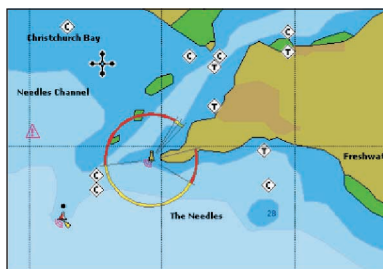
The Window is automatically closed if 'ZOOM...' is not pressed for 2 seconds and the selected zoom factor will be used at the next zoom in/out.

### 3.5.1.5 Fonts & Symbols

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Fonts & Symbols" + 'ENTER'

On MAX charts it is possible to set the size of all names and symbols drawn on the charts, selecting between Normal size (the regular characters size) and Large size.

#### NORMAL size



#### LARGE size

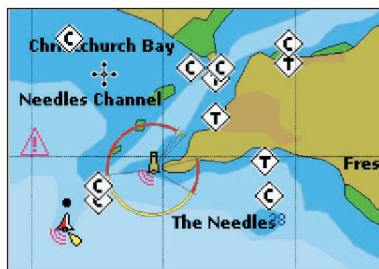


Fig. 3.5.1.5 - Example of Normal size (on the left side) and Large side (on the right side) settings

### 3.5.1.6 Dynamic Nav-Aids

- 'MENU' + 'MAP SETTINGS' + 'ENTER' + "Dynamic Nav-Aids" + 'ENTER'

This function allows settings blinking lights on Nav-Aids. The blink period and color of each Nav-aid is read from the Nav-Aid attributes available on the data cartridge. When the ship is inside the Nav-Aid nominal range, the light of the Nav-Aid will start blinking.

### 3.5.1.7 Mixing Levels

- 'MENU' + 'MAP SETTINGS' + 'ENTER' + "Mixing Levels" + 'ENTER'

When the map coverage at the current zoom level does not fill the entire screen, the chartplotter draws the rest of the map expanding the cartographic information read from, at most, two zoom levels above the current zoom level. For this reason the map is drawn three times: firstly it draws the two levels before the current level and then the current level. The area covered by the cartographic data read from the previous levels is identified by a dotted pattern. When the cursor is moved on an area not covered by data of the current level the chartplotter zooms out to the first level covered by cartographic data. The default setting is Off.

#### Note

*The Mixing Levels function works only with the new C-CARDS. It also affects the speed of the redraw of the screen. If this function is not used it maybe disabled.*

### 3.5.1.8 Safety Status Bar

- 'MENU' + 'MAP SETTINGS' + 'ENTER' + "Safety Status Bar" + 'ENTER'

This feature displays a status bar with six boxes showing the status of certain functions. Any warning or alarm condition is identified by the red colour to indicate possible risk.

①	②	③	④	⑤	⑥
<b>NORMAL</b>	<b>BEST MAP</b>	<b>DATA OFF</b>	<b>DECLUT.</b>	<b>DANGERS</b>	<b>CAUTIONS</b>

*Fig. 3.5.1.8 - Safety Status Bar*

Boxes definition is as follows:

### ① Zoom

- Normal: when the chart is displayed at normal scale.
- U. Zoom: red when the chart is under-zoomed out more than twice normal scale, gray otherwise.
- O. Zoom: red when the chart is over-zoomed in more than twice normal scale, gray otherwise.
- Chart Lock: red when the chart is zoomed in more than twice normal scale, gray otherwise.

### ② Best Scale

Red when a more detailed chart is available under the cursor position.

### ③ Data Off

Red when at least one of the following objects or layers is turned off (by the user): Depths/soundings; Wrecks/obstructions; Tracks/routes; Attention areas; Nav-Aids.

### ④ Clear View

Displays when Clear View function is On.

### ⑤ Dangers

Red when “Guardian Technology” detects one of the following objects: Land, Intertidal, Depth Area, Rocks, Obstructions, Shoreline Constructions, Fishing Facility, Wrecks, Draggd area, Diffusion area, Mooring facilities, Pingos and Production installations.

### ⑥ Caution

Red when “Guardian Technology” detects cautionary or restricted area.

## 3.5.1.9 Currents Prediction

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Currents Prediction" + 'ENTER'

It is possible to see the variation of the Tidal arrows on the selected area at any given time. A window is shown on the low-left side of the chart, press 'ENTER' to set the date and time manually, 'MENU' to decrease time and 'GOTO' to increase time.

3.5.1.10 Other Map Configurations

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER'

This function allows the user to customize the following selections and is divided into the following setting: Marine Settings, Depth Settings, Land Settings and Chart Settings.

**Display Mode:** To simplify the customization of the chart display, the map settings are now re-organized in modes allowing the user to choose the preferred setting. Pre-programmed settings are user selectable from Full, Medium, Low, Radar, Tides, Custom. The default setting is Custom.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER'

The table below shows the selections for each mode:

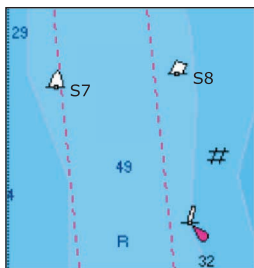
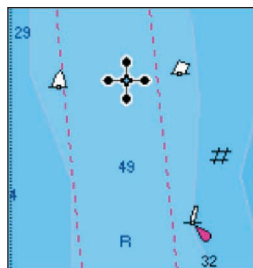
Setting	Full	Medium	Low	Radar	Tides	Custom (Default values)
Names	On	On	On	On	On	On
Buoys Name	On	Off	Off	Off	Off	On
Nav-Aids	On	On	On	On	Off	On
Light Sectors	On	Off	Off	Off	Off	On
Attention Areas	On	On	Off	Off	Off	On
Tides & Currents	On	Off	Off	Off	On	On
Seabed Type	On	Off	Off	Off	Off	On
Ports & Services	On	On	Off	On	Off	On
Tracks & Routes	On	Off	Off	Off	Off	On
Underwater Objects	On	On	Off	Off	Off	On
Depth Range	On	On	On	Off	On	On
Depth Range Min	3 Mt	3 Mt	3 Mt	3 Mt	3 Mt	3 Mt
Depth Range Max	10 Mt	10 Mt	10 Mt	10 Mt	10 Mt	10 Mt
Rocks >	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt
Rocks <	9999Mt	5 Mt	5 Mt	5 Mt	5 Mt	9999Mt
Land Elevation Data	On	Off	Off	Off	Off	On
Roads	On	Off	Off	Off	Off	On
POIs	On	Off	Off	Off	Off	On
Lat/Lon Grid	On	Off	Off	Off	Off	On
Chart Boundaries	On	Auto	Off	Off	Off	Auto
Mixing Levels	On	Off	Off	Off	Off	Off
Value Added Data	On	Off	Off	Off	Off	On

**Names:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Names" + 'ENTER'

**Buoys Name:** On/Off. The default setting is On. To identify better the Buoys, the name/number of the buoys is shown next to the icon on the chart.



**BUOYS NAME On****BUOYS NAME Off***Fig. 3.5.1.10 - Buoy Name*

On the left side of the previous figure the two buoys have their name shown on the right side. On the right side of the previous figure, the two buoys do not show the name.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Buoys ID" + 'ENTER'

**Nav-Aids:** On/Off. The default setting is On. When selected it affects Lights, Signals, Buoys & Beacons display.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Nav-Aids" + 'ENTER'

**Light Sectors:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Light Sectors" + 'ENTER'

**Attention Areas:** On/Off. The default setting is On. The Attention Areas will always be contour only when On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Attention Areas" + 'ENTER'

**Tides & Currents:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Tides & Currents" + 'ENTER'

**Seabed Type:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Seabed Type" + 'ENTER'

**Ports & Services:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Ports & Services" + 'ENTER'

**Tracks & Routes:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Tracks & Routes" + 'ENTER'

**Underwater Objects:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Underwater Objects" + 'ENTER'

**Depth Range:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Depth Range" + 'ENTER'

**Depth Range Min:** Sets a min reference depth value. The default setting is 3 Mt.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Depth Range Min" + 'ENTER'

**Depth Range Max:** Sets a max reference depth value. The default setting is 10 Mt.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Depth Range Max" + 'ENTER'

**Rocks >:** Sets a min reference rocks value.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Rocks >" + 'ENTER'

**Rocks <:** Sets a max reference rocks value.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Rocks <" + 'ENTER'

**Land Elevation Values:** the Land Elevation areas are always shown, but it is possible to set On/Off the Land Elevation display. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Land Elevation Values" + 'ENTER'

**Roads:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Roads" + 'ENTER'

**POIs (Points Of Information):** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "POIs" + 'ENTER'

**Lat/Lon Grid:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'

**Chart Boundaries:** On/Off/Auto. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Chart Boundaries" + 'ENTER'

**Value Added Data:** On/Off. The default setting is On.

- 'MENU' + "MAP SETTINGS" + 'ENTER' + "Other Map Configurations" + 'ENTER' + "Value Added data" + 'ENTER'

### 3.5.2 GETTING AUTOMATIC INFO

The type of Automatic Info is user selectable.

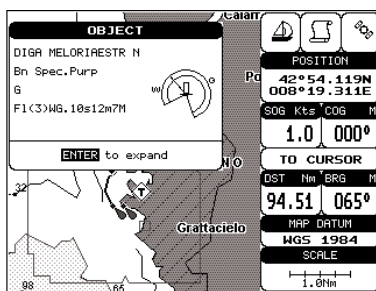
- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "AUTO INFO" + 'ENTER'

The possible settings are:

- **Off:** disabled, no automatic info shown at all.
- **On Points:** only on points. This is the default setting.
- **On All:** on all objects (points, lines and areas).

The Automatic Info On Points shows information when the cursor is placed on points (as Port Services, Tides, lights, wrecks, rocks, buoys, beacons, obstructions, land markers, etc.). The Automatic Info On All shows information when the cursor is placed on points, on lines (as Depth contours, Traffic Separation, Territorial Sea, Cartographic Lines etc.) on areas (Depth, Built-up, Sea, Attention, Restricted etc.) and on names (on the beginning of the text -hot spot- or on any of the characters of the name -name message box-).

The details on Land, Source of Data, Cartographic Area and Spot Soundings are not shown.



*Fig. 3.5.2 - Automatic Info on Points window*

If you press 'ENTER' all available information about the cartographic point under the cursor will be shown.

### 3.5.2.1 Info on objects with Pictures

On the Quick Info, there will be the camera icon on the top bar of the window if at least one of the objects found has one or more pictures associated.

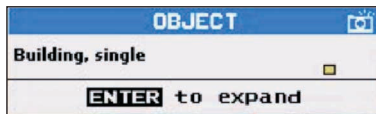


Fig. 3.5.2.1 - Example of Quick Info on objects with picture

On the Full Info, there will be the small camera icon on a corner of the square containing the object icon or a big photo icon centered on the square for the object without icon.

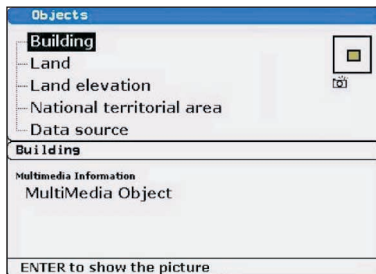


Fig. 3.5.2.1a - Example of Full Info on objects with picture

To see the picture press 'ENTER' when the object with a picture is highlighted.

### Change Picture Size

When the picture is shown, it is possible to fit it to screen by pressing 'ENTER'.

## 3.5.3 INFO TREE AND EXPANDED INFO PAGE

This page combines the Info Tree and the Expanded Info pages; this gives the advantage of showing the details of the object selected on the Info Tree while the cursor is moving through the Info Tree's items.

The upper side of the page contains the Info Tree and the Lower side contains the expanded information. While moving the cursor through the Info Tree, all the relevant information of the selected object is shown on the lower part of the page. When the selected object is a Tide Height, pressing 'ENTER' the Tide page is shown.

Pressing 'CLEAR' the page is closed. If the information shown exceeds the page size, the user may scroll the page.

### 3.5.4 INFO FUNCTION

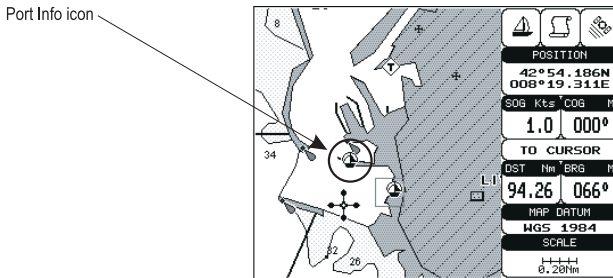
Place the cursor in any place you want and press:

- 'MENU' + "INFO" + 'ENTER'

to show the Info Tree and Expanded Info page (see Par. 3.5.4).

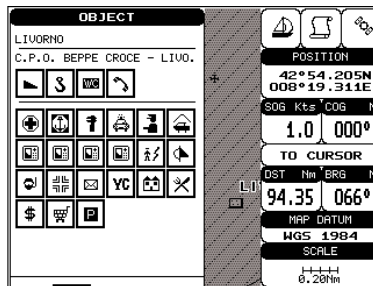
### 3.5.5 GETTING PORT INFO

Upon viewing the chart of a port or harbour, you will see a Port Info icon that can be clicked on to query the available information immediately displayed with many details. The Port Info icon is visible only if the Ports & Services option is On (default setting).



*Fig. 3.5.5 - Port Info icon*

The available information is shown in the Automatic Info window where icons of the available services are shown:



*Fig. 3.5.5a - Automatic Info window*

To expand information about that object press 'ENTER'.

### 3.5.6 GETTING TIDE INFO

When you will see a Tide Info icon you can click on it to query the available information that will immediately be displayed.

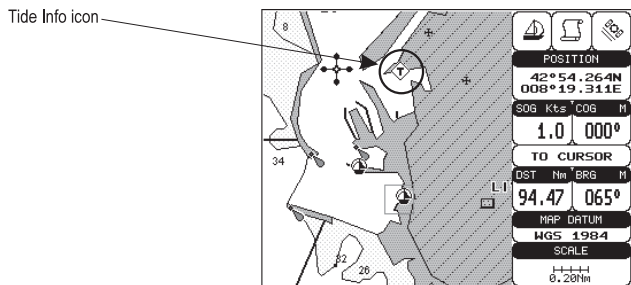


Fig. 3.5.6 - Tide Info icon

Place the cursor on the Tide symbol, a Automatic Info window is opened:

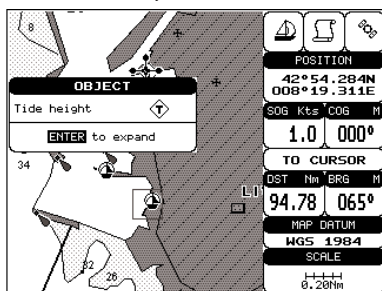


Fig. 3.5.6a - Automatic Info on Tide

To display the Tide Graph page, press 'ENTER' for two times.

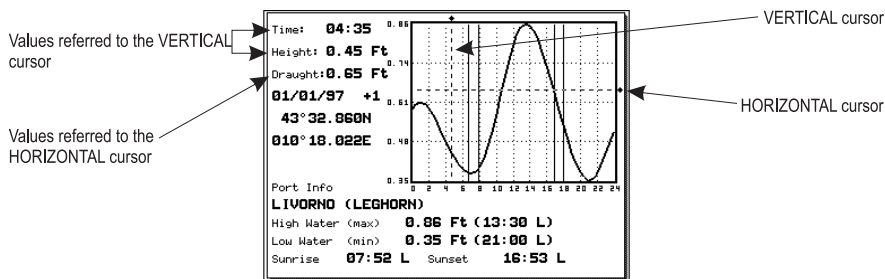


Fig. 3.5.6b - Tide Graph

Using the cursor key, it is possible to move the cursor anywhere on the graph and display the time, height (vertical cursor) and draught (horizontal cursor) on a particular graph point. Also use 'ZOOM IN' or 'ZOOM OUT' to go to previous or next day and 'ENTER' to set date (move the cursor key up/down to insert the desired number and use it left/right to move cursor to left/right).

---

**Note**

*Tide graphs are an approximation of the Tide and they should be used in conjunction with traditional Tide tables and navigational methods.*

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### 3.5.7 FIND FUNCTION

The chartplotter allows finding Nearest Services, Port By name, Tide Stations, Wrecks and Obstructions.

#### 3.5.7.1 Finding Nearest Services

To locate and display the nearest available facilities of a particular type (i.e. the nearest Hospital, sailmaker, bank, etc.).

- 'MENU' + 'FIND' + 'ENTER' + 'NEAREST SERVICES' + 'ENTER'

The icons of the available services are shown. Use the cursor key to select any facility and press 'ENTER'. The list of the nearest ports (up to 10) containing the facility will be shown on the screen. Then choose the port you want and press 'ENTER'.

#### 3.5.7.2 Find Port

To show the list of all ports stored on the C-CARD and to locate them on the map follow the procedure:

- 'MENU' + 'FIND' + 'ENTER' + 'PORT BY NAME' + 'ENTER'

---

**Note**

*A Warning message is shown if there is no C-CARD inserted or there are no ports on the C-CARD.*

---

#### Searching by name

- 'MENU' + 'FIND' + 'ENTER' + 'PORT BY NAME' + 'ENTER' + 'SEARCH PORTS' + 'ENTER'

The list sorted by name of all available ports is shown if the Range option is disabled (selected Off); otherwise the list of available ports in the range is shown. Press 'MENU' and then use the cursor key to insert the port name (max 15 characters). Press 'ENTER' to confirm the inserted name (press 'CLEAR' to close the menu). If the inserted name is found, the list of all ports which name has the inserted name appears on the screen. Repeat the operation to refine search or move through the list with cursor key. Press 'ENTER' to locate the port on the map.

#### Searching port into selected range

- 'MENU' + 'FIND' + 'ENTER' + 'PORT BY NAME' + 'ENTER' + 'RANGE' + 'ENTER'

Allows to locate the port into a selected range. Using the cursor key to insert the preferred value. Press 'ENTER' to confirm.

### 3.5.7.3 Finding Tide Stations

Finds the nearest Tide Stations (up to 10) on the map, from the boat position - if a valid fix is received - or from the cursor position - if the received fix position is not good.

- 'MENU' + 'FIND' + 'ENTER' + 'TIDE STATIONS' + 'ENTER'

After a few seconds a window appears. Choose the Tide Station you want and press 'ENTER' to display the Tide Graph page (see Par. 3.5.7). Press 'CLEAR' to display the Tide Station chosen.

### 3.5.7.4 Finding Wrecks

Searches for Nearest Wrecks:

- 'MENU' + 'FIND' + 'ENTER' + 'WRECKS' + 'ENTER'

Use the cursor key to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' to locate the selected Wreck on the map.

### 3.5.7.5 Finding Obstructions

Searches for Nearest Obstructions:

- 'MENU' + 'FIND' + 'ENTER' + 'OBSTRUCTIONS' + 'ENTER'

Use the cursor key to select the port and 'ZOOM IN'/'ZOOM OUT' to select next/previous page. Press 'ENTER' to locate the selected Obstruction on the map.

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## 3.6 MAN OVERBOARD (MOB)

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It is an important function useful in the case someone or something falls overboard.

### 3.6.1 INSERTING MOB

Press 'MOB' to place MOB symbol at ship's coordinates. On the screen the MOB symbol and a window to advise tha the MOB is activated appear, press 'CLEAR' to delete this window. Data displayed in Text Area are related to MOB. Placing the cursor on the MOB symbol an information window appears:



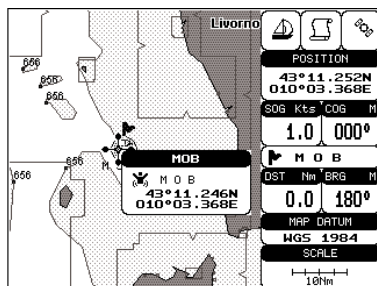


Fig. 3.6.1 - Man Overboard

#### Note

*In the information window the bottom side "ENTER for Options" appears only if the "Advanced Functions" item in the "Basic Settings" menu is activated (On), see Par. 3.2.4.*

### 3.6.2 DELETING MOB

Press 'MOB', select 'CANCEL' and press 'ENTER' again. The MOB symbol remains on the screen shaded until the next screen redraws.

#### Note

*If the "Advanced Settings" item in the menu "Basic Settings" is activated (On), see Par. 3.2.4, placing the cursor on MOB the information window appears as shown in the previous Fig. 3.6.1. Press 'ENTER', select "CANCEL" and press 'ENTER' again: the MOB symbol remains on the screen shaded until the next screen redraws.*



# 4

## For the Experienced User

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Now you have had a chance to become familiar with your new chartplotter, there are a great number of advanced features that you will find helpful. First of all the use of the Advanced Mode.

The chartplotter can operate in two different modes: Basic Mode and Advanced Mode. In the first mode there is a restricted number of functions, while in Advanced Mode it is possible to have more available functions, for example it is possible to handle Waypoints. To select the Advanced Mode:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "ADVANCED FUNCTIONS" + 'ENTER' + "ON" + 'ENTER'

When Advanced Functions is Off the chartplotter operates in Basic Mode.

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### 4.1 MORE ABOUT CREATING AND USING ROUTES

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At anytime, you may add or delete Waypoints, see a route summary, reverse the direction of the route or erase the entire route.

#### 4.1.1 WAYPOINT

You may add Waypoints, delete Waypoints from a route, move any Waypoint in the route to another location, insert a Waypoint between two existing ones, find any Waypoint at anytime. Every time you place the cursor on a Waypoint the following functions are available.

##### 4.1.1.1 Adding Waypoint

- Select Advanced Mode + 'ENTER' + "WAYPOINT" + 'ENTER'

The Waypoint appears on the cursor position. An info window is shown containing route number, Waypoint name, symbol and Latitude/Longitude.

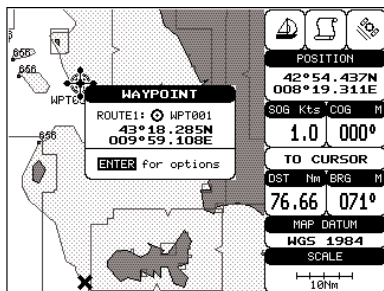


Fig. 4.1.1.1 - Waypoint placing

#### 4.1.1.2 Creating a route

Repeat the "Adding Waypoint" procedure described in the previous Par. 4.1.1.1. The sequence of moving the cursor and pressing 'ENTER' is continued to create the route, until you have reached the last Waypoint, your final destination. Segments connecting the Waypoints are shown, and the starting point is identified by a circle surrounding the first Waypoint of the route:

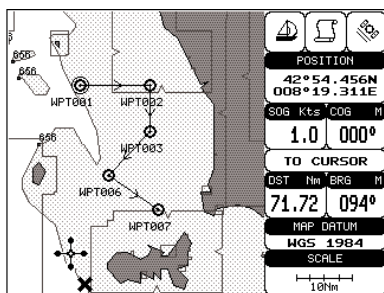


Fig. 4.1.1.2 - Route planning

#### 4.1.1.3 Deleting Waypoint

- Select Advanced Mode + Place cursor on Waypoint

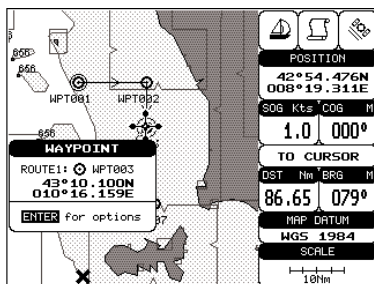


Fig. 4.1.1.3 - Deleting Waypoint (1)

Press 'ENTER'. Select "DELETE" and press 'ENTER'. The Waypoint is deleted and a new line between previous and next Waypoint is shown. The deleted Waypoint remains shaded until the screen is redrawn.

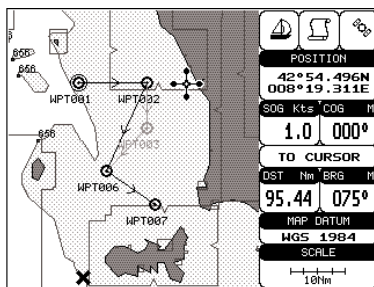


Fig. 4.1.1.3a - Deleting Waypoint (II)

#### 4.1.1.4 Deleting route

- Select Advanced Mode + Place cursor on Waypoint

Press 'ENTER'. Select "DELETE ROUTE" and press 'ENTER'. A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The route remains on the screen shaded until the screen is redrawn. To delete route see also Par. 4.1.2.2 and 4.1.2.5.

#### 4.1.1.5 Distance and Bearing to Target

Once you have positioned the cursor on the desired starting Waypoint (it could be the first Waypoint of the route or another one) press 'GO-TO'. A circle surrounds the Waypoint symbol. A line is shown, connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

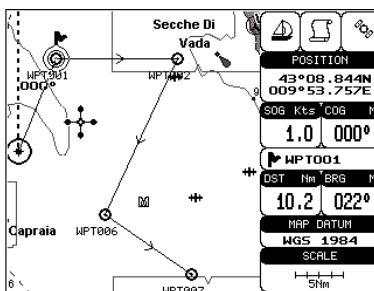


Fig. 4.1.1.5 - Selecting destination (Target)

The destination will automatically switch to the next Waypoint on the route when you reach or pass the present destination.

## Time To Go

When the Target is set the TTG value is displayed in the Graphic Data page (or in the Navigation Data page):

- 'PAGE' more times

### Note

*If SOG value is less than 1.0 knots or the BRG is greater than 90 degrees, the TTg value is not displayed.*

## Deleting Target

If in Basic Mode place cursor on Target icon and press 'CLEAR': the symbol that identifies Target disappears from the screen, but the Waypoint remains.

If in Advanced Mode (see Par. 3.4.3) place cursor on Target icon, press 'ENTER', select "STOP NAV" and press 'ENTER': the symbol that identifies Target disappears from the screen, but the Waypoint remains.

### Note

*If you select "NEXT"/"PREV" and press 'ENTER', the Target icon is moved on the next/previous Waypoint in the route.*

Otherwise in both Modes (when the cursor is placed in a generic position on the chart) press 'GO-TO'. A window appears to advice that the Destination point is present: select "STOP" and press 'ENTER', the symbol that identifies Target disappears from the screen, but the Waypoint remains.

### Note

*If you select "START" and press 'ENTER', the Target icon is moved on the new cursor position.*

### 4.1.1.6 Moving Waypoint

- Select Advanced Mode + Place cursor on Waypoint

Press 'ENTER'. Select "MOVE" and press 'ENTER'. Use the cursor key to move the cursor: a dotted line, connecting the Waypoint to the new position, is shown:

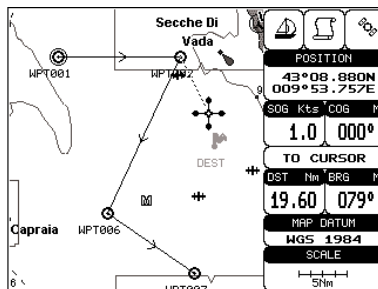


Fig. 4.1.1.6 - Moving Waypoint function (1)

To place the Waypoint in the new position, choose the new place and press 'ENTER' ('CLEAR' otherwise), Waypoint appears in the new position:

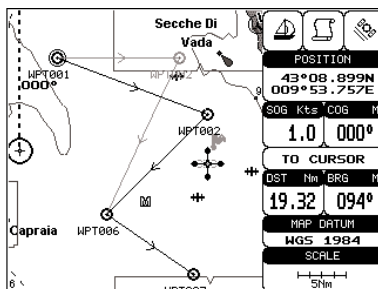


Fig. 4.1.1.6a - Moving Waypoint function (II)

#### 4.1.1.7 Inserting Waypoint

Every time you place the cursor on the segment connecting two existing Waypoints of a route the following function is available.

- Place cursor on route leg

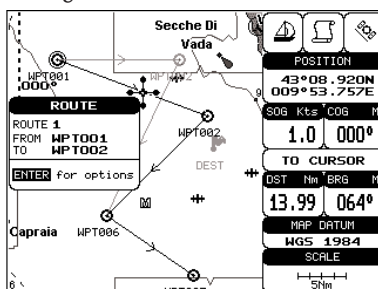


Fig. 4.1.1.7 - Placing Waypoint between two existing ones (I)

Press 'ENTER'. Select "INSERT" and press 'ENTER'. The line between the two Waypoints is turned into a dotted line: move the cursor to the new position. When the cursor is stationary for one second or two, the line will "rubber-band", drawing a dotted line between the last Waypoint and the cursor, and another dotted line between the cursor and the next Waypoint:

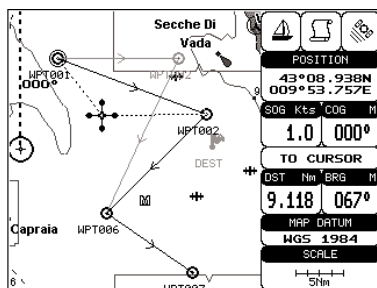


Fig. 4.1.1.7a - Placing Waypoint between two existing ones (II)

Once you have positioned the cursor at new location, press 'ENTER' (press 'CLEAR' to abort operation):

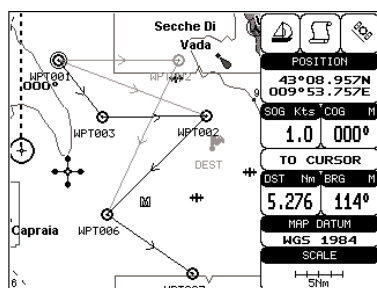


Fig. 4.1.1.7b - Placing Waypoint between two existing ones (III)

#### 4.1.1.8 Editing Waypoint

- Select Advanced Mode + Place cursor on Waypoint

Press 'ENTER'. Select "EDIT" and press 'ENTER' to modify a Waypoint. A window will be shown with Name, Symbol and Latitude/Longitude of the Waypoint, advising about what Waypoint data are modifiable.

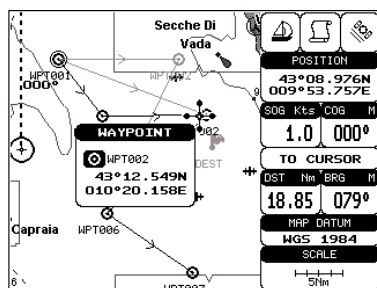


Fig. 4.1.1.8 - Edit Waypoint (I)

Use the cursor key to select the field. If you have selected Name field, press



'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'. If Symbol field is selected press 'ENTER': a window with 16 different symbols appears:

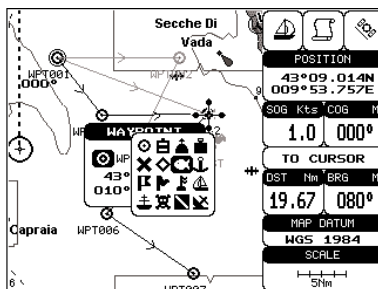


Fig. 4.1.1.8a - Edit Waypoint (II): Waypoint symbols

Use the cursor key to select the symbol and press 'ENTER'. If select Coordinates field, press 'ENTER' and then use the cursor key to insert the value. Then press 'CLEAR'.

**Note** \_\_\_\_\_ **FOR COLOR CHARTPLOTTER**  
*If Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'.*

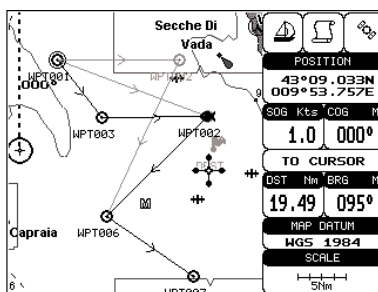


Fig. 4.1.1.8b - Edit Waypoint (III)

#### 4.1.1.9 Finding information about Waypoints: User Points List page

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

Move up/down the cursor key to select the User Point you wish. If the page contains more than 8 User Points, the list continues in the next pages.

#### Finding User Points

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "FIND" + 'ENTER'

The chartplotter exits from the User Points List page and redraws the chart. The selected point appears, with the cursor placed on it.

### **Deleting selected User Point**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-ONE" + 'ENTER'

Deletes the selected User Point. A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise).

### **Deleting all User Points with the same symbol**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-SYM" + 'ENTER'

Deletes all User Points which have the same identifier of that shown in the selected row. A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise).

### **Deleting all User Points with the same type**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-TYP" + 'ENTER'

Deletes all User Points which have the same type of that shown in the selected row. A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise).

### **Deleting all stored User Points**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "CLR-ALL" + 'ENTER'

A warning message appears, select "YES" and press 'ENTER' ('CLEAR' otherwise) to delete all stored User Points.

### **Send/Receive User Points**

Sends all User Points to an external device using the serial port:

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "SEND"

Reads all User Points from NMEA Input port:

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER' + "RECEIVE"

## **4.1.2 ROUTES**

The following functions are used for the route management. The chartplotter handles routes from 1-25, which are permanently stored in the memory as they are created. Only one route can be selected for work at any one time.

### **4.1.2.1 Selecting Route**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "CURRENT ROUTE" + 'ENTER'

A window appears with the route number list and the related route name. Use the cursor key to scroll the list up/down. Pressing 'ENTER' the selected route becomes the current route.

**Note**

*If there is the Target in the current route, it is not possible to change the current route. So if the "Current Route" item is selected, a Warning window appears because Go-To is placed in the current route.*

**4.1.2.2 Deleting route**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "DELETE ROUTE" + 'ENTER'

A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The route remains on the screen shaded until the screen is redrawn. To delete route see also Par. 4.1.1.4 and 4.1.2.5).

**4.1.2.3 Reversing route**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "REVERSE ROUTE" + 'ENTER'

Reversing a route plan is most typically used to return to the point where the route originally started.

**Note**

**FOR COLOR CHARTPLOTTER**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE COLOR" + 'ENTER'

*A window is opened: use the cursor keys to select the route color you want among the eight colors available. Press 'ENTER' to confirm. The route appears on the screen colored by the selected color. It is possible to select a different color for any route.*

**4.1.2.4 Finding information about a route: Route Report**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER'

If there are more than 8 Waypoints shown, use the cursor key to select another page.

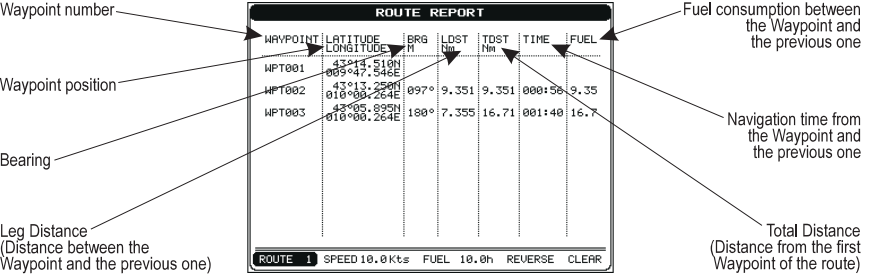


Fig. 4.1.2.4 - Route Data Report page

## Selecting route

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "ROUTE #" + 'ENTER'

Use the cursor key to select the route number and press 'ENTER'. The route, shown by straight segments, is centered on the screen, with the cursor on the central Waypoint. See also Par. 4.1.2.1.

### Note

---

*If there is the Target in the current route, it is not possible to change the current route. So if the "Route #" item is selected, the chart plotter emits three beeps.*

---

## Changing Speed & Fuel values

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER'

It is possible to modify the Speed and Fuel consumption values, respectively by selecting "SPEED" and "FUEL". Insert value by using the cursor key and pressing 'ENTER'.

## Reversing route

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "REVERSE" + 'ENTER'

Reversing a route plan is most typically used to return to the point where the route originally started. See also Par. 4.1.2.3.

## Deleting route

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE REPORT" + 'ENTER' + "CLEAR" + 'ENTER'

A window is opened: select "YES" and press 'ENTER' to confirm (select "NO" and press 'ENTER' otherwise). The route remains on the screen shaded until the screen is redrawn. To delete the route see also Par. 4.1.1.4 and 4.1.2.2.

### 4.1.2.5 Route Name

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "ROUTE NAME" + 'ENTER'

Use the cursor key to insert the route name (max 16 alphanumeric char.).

### 4.1.2.6 Send/Receive Route

To transmit the Active Route information onto the NMEA output port.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "SEND"  
The NMEA WPL & RTE messages are sent to the output port.

To save Route information received from the NMEA input port.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ROUTE" + 'ENTER' + "RECEIVE"

The received route is saved on the Active route, overwriting it. The NMEA WPL & RTE messages are sent to the input port.

---

## 4.2 USING MARKS & EVENTS

---

You may place a Mark, as it is called, at your cursor position, while Event is created at your vessel position.

### 4.2.1 MARKS

You may tag a location on the chart with a Mark symbol and number, which you can record for later use. Every time you place the cursor on a Mark the following functions are available.

#### 4.2.1.1 Adding Mark

- Select Advanced Mode + 'ENTER' + "MARK" + 'ENTER'

The new Mark appears on your cursor position. An info window containing Mark name, symbol and Latitude/Longitude is shown.

#### 4.2.1.2 Deleting Mark

- Select Advanced Mode + Place cursor on Mark

Press 'ENTER'. Select "DELETE" and press 'ENTER': the Mark remains on the screen shaded until the next screen is redrawn.

---

#### Note

*If you try to delete a Mark that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to delete the Mark, press 'ENTER'.*

---

#### 4.2.1.3 Goto

- Place cursor on Mark

Press 'GO-TO': a circle encloses the Mark symbol. A straight line is shown on the screen connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

#### 4.2.1.4 Moving Mark

- Select Advanced Mode + Place cursor on Mark

Press 'ENTER'. Select "MOVE" and press 'ENTER'. By moving the cursor with the cursor key, a dotted line connecting the Mark with the new position is shown:

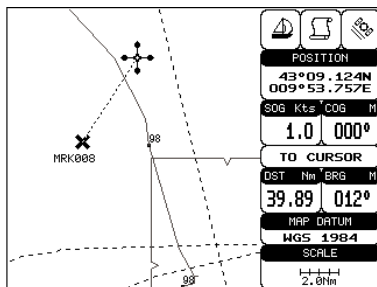


Fig. 4.2.1.4 - Moving Mark function (I)

Press 'ENTER':

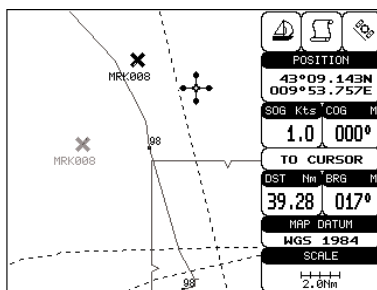


Fig. 4.2.1.4a - Moving Mark function (II)

The Mark is placed in the new position, the "old" Mark, remains on the screen shaded until the screen is redrawn.

#### Note

*If you try to move a Mark that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to move the Mark, press 'ENTER'.*

### 4.2.1.5 Editing Mark

- Select Advanced Mode + Place cursor on Mark

Press 'ENTER'. Select "EDIT" and press 'ENTER'. A window appears to modify Name, Symbol and coordinates of the existing Mark.

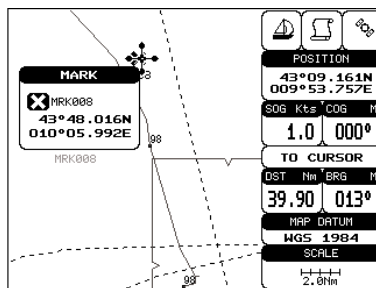


Fig. 4.2.1.5 - Edit Mark

Use the cursor key to select the field. If you have selected Name field, press 'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'. If Symbol field is selected press 'ENTER': a window with 16 different symbols appears. Use the cursor key to select the symbol and press 'ENTER'. If Coordinates field is selected, press 'ENTER' and then use the cursor key to insert the value. Then press 'CLEAR'.

**Note** \_\_\_\_\_ **FOR COLOR CHARTPLOTTER**

*If Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'.*

#### 4.2.1.6 Finding information about Marks: User Points List page

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points (Marks, Events and Waypoints). Move up/down the cursor key to select the User Point you wish. If the page contains more than 8 User Points, the list continues in the next pages. See Par. 4.1.1.9.

#### 4.2.1.7 Add to Route

- Select Advanced Mode + Place cursor on Mark

Press 'ENTER'. Select "ADD TO ROUTE" and press 'ENTER': the selected Mark is connected to the current route. The same Mark can be added in many routes.

**Note** \_\_\_\_\_

*An existing Mark can be connected to the current route in another mode too. Place cursor on Mark, the information window related to the Mark appears, press 'CLEAR' to close the window and then press 'ENTER', select the Waypoint option and press 'ENTER'. The Mark is connected to the current route.*

## 4.2.2 EVENTS

In Navigate mode you may place a location with an Event symbol and num-

ber, directly on the ship's position. Move the cursor to exit from Navigate mode; place the cursor on an Event to access the following functions.

4.2.2.1      **Adding Event**

- Select Advanced Mode + 'MODE', then 'ENTER' + "EVENT" + 'ENTER'  
An Event is placed directly on the ship's position.

4.2.2.2      **Deleting Event**

- Place cursor on Event  
Press 'ENTER'. Select "DELETE" and press 'ENTER': the Event remains on the screen shaded until the next screen is redrawn.

**Note**

*If you try to delete a Event that belongs to many routes, the chart plotter emits three beeps and on the screen a Warning message appears. If you want to delete the Event, press 'ENTER'.*

4.2.2.3      **Goto**

- Place cursor on Event  
Press 'GO-TO': a circle encloses the Event symbol. A straight line is shown on the screen connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

4.2.2.4      **Editing Event**

- Place cursor on Event  
Press 'ENTER'. Select "EDIT" and press 'ENTER'. A window appears to modify Name, Symbol of the existing Event.

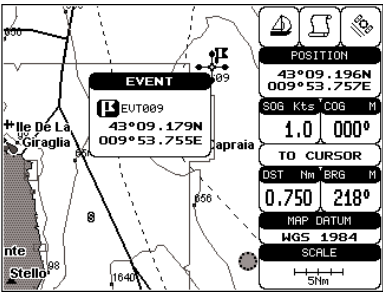


Fig. 4.2.2.4 - Edit Event

Use the cursor key to select the field. If you have selected Name field, press 'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'. If Symbol field is selected press 'ENTER': a window with 16 different symbols appears. Use the cursor key to select the symbol and press 'ENTER'. Then press 'CLEAR'.



*If Color field is selected press 'ENTER': a window with 8 different colors appears, use the cursor key to select the desired color and press 'ENTER'.*

---

#### **4.2.2.5 Finding information about Events: User Points List page**

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER POINTS" + 'ENTER'

A full window is opened showing information about all stored User Points (Marks, Events and Waypoints). Move up/down the cursor key to select the User Point you wish. If the page contains more than 8 User Points, the list continues in the next pages. See Par. 4.1.1.9.

#### **4.2.2.6 Add to Route**

- Place cursor on Event

Press 'ENTER'. Select "ADD TO ROUTE" and press 'ENTER': the selected Event is connected to the current route. The same Event can be added in many routes.

#### **Note**

*An existing Event can be connected to the current route in another mode too. Place cursor on Event, the information window related to the Event appears, press 'CLEAR' to close the window and then press 'ENTER', select the Waypoint option and press 'ENTER'. The Event is connected to the current route.*

---

---

## **4.3 MORE ABOUT A-B-C-D FUNCTION**

---

The A-B-C-D function, explained in the previous paragraph 3.3, if Advanced Mode is selected, allows you not only to create the A, B, C, D points and to delete them, but also to modify and move them.

### **4.3.1 INSERTING THE A-B-C-D POINTS**

Place the cursor on the desired position and press 'ENTER'. On the screen the Create window appears, by using the cursor key select "A-B-C-D" and press 'ENTER': the A point and an information window on A appear. Move the cursor, press 'ENTER', select "A-B-C-D" and press 'ENTER' again: the B point appears, connected to A with a straight segment; an information window on A-B segment (distance (DST), bearing (BRG) and total distance from the first point) appears. Moving the cursor, pressing 'ENTER', selecting "A-B-C-D" and pressing 'ENTER' places the C and D points (see previous Fig. 3.3.1).

### **4.3.2 DELETING THE A-B-C-D POINTS**

When placing the cursor on the desired point (A, B, C or D) the information window appears. Press 'ENTER', select "DELETE" and press 'ENTER' again: the point is deleted. When the point is deleted, the cursor is placed on the previous point, if existed. The labels of the next points are renamed.

### **4.3.3 DELETING THE A-B-C-D SEGMENT**

When placing the cursor on the desired point (A, B, C or D) or on segment between two points the information window appears. Press 'ENTER', select "DELETE ALL" and press 'ENTER' again: all points and connecting segments are deleted.

### **4.3.4 MOVING THE A-B-C-D POINTS**

When placing the cursor on the desired point (A, B, C or D) the information window appears. Press 'ENTER', select "MOVE" and press 'ENTER': by the cursor key move the cursor, on the screen a dotted line connecting the point to move with the new position appears. By pressing 'ENTER' the point is placing in the new position.

### **4.3.5 INSERTING THE A-B-C-D POINTS**

Placing cursor on the segment connecting two points, the information window appears. Select "INSERT" and press 'ENTER': by the cursor key move the cursor, on the screen a dotted line appears. By pressing 'ENTER' the new point is placing between the two existed points which are renamed.

### **4.3.6 NAVIGATING ON THE A-B-C-D POINTS**

If fix received is good, place the cursor on the desired point A, B, C or D and press 'GO-TO'. When ship reaches the Destination point, navigation follows the next point (if exists). When Target is set, three options are available: STOP NAV, NEXT and PREV.

---

## **4.4 USING THE TRACK FUNCTIONS**

---

The chartplotter can be set up for recording your track as you move and for plotting this track on the chart.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER'

#### 4.4.1 SELECTING ACTIVE TRACK

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "ACTIVE TRK" + 'ENTER'

Select the number of the active track. The default setting is 1.

#### 4.4.2 ENABLING TRACK STORING

- 'MENU' + "CONFIGURAZIONI SPECIALI" + 'ENTER' + "TRACCIA" + 'ENTER' + "TRACCIA" + 'ENTER'

To enable (On) or disable (Off) the track storing. It is not possible to use the track storing if you are not receiving a valid fix. The default setting is On.

#### 4.4.3 DISPLAYING TRACK

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "VISIBLE" + 'ENTER'

To enable (On) or disable (Off) the displaying of track. The default setting is Off.

#### 4.4.4 SELECTING TRACK LINE PATTERN

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "LINE PATTERN" + 'ENTER'

Selects the desired line pattern for the selected track.

**Note** \_\_\_\_\_ **FOR COLOR CHARTPLOTTER**  
*"LINE PATTERN" item is substituted by the "COLOR" item, to select the desired color among the eight colors available for the selected track.*

---

#### 4.4.5 DELETING TRACK

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DISTANCE" + 'ENTER'

Deletes all track. After pressing 'ENTER' a warning window appears: select "Yes" and press 'ENTER' to confirm (select "No" otherwise).

#### 4.4.6 DELETING SELECTED TRACK

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DELETE SELECTION" + 'ENTER'

Deletes the track selected. After pressing 'ENTER' a window appears: press 'ENTER' to set the first point, then press 'ENTER' to set the second point. A warning window appears: select "Yes" and press 'ENTER' to confirm the deletion.

(select "No" otherwise).

#### 4.4.7 SELECTING TRACK MEMORIZING TYPE

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "STEP UNIT" + 'ENTER'

Choose Distance (Dist) - the chartplotter can store a fix when the distance from its last stored position is greater than a defined distance; Time - the chartplotter can store a fix after a defined time; Auto - the software decides when storing a position, on the basis of the straight or curved track. The default setting is Time.

#### 4.4.8 SELECTING DISTANCE

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "DISTANCE" + 'ENTER'

When the tracking function is On and the type of track storing is Distance, you can store a fix when the distance from its last stored position is greater than a defined distance. Choose in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 Nm (the distance unit is selected by the user, see Cap. 5). The default setting is 0.01 Nm.

#### 4.4.9 SELECTING TIME

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "TRACK" + 'ENTER' + "TIME" + 'ENTER'

When the tracking function is On and the type of track storing is Time, the chartplotter can store a fix after a defined time. Choose among 1, 5, 10, 30 sec, 1, 5, 10 min. The default setting is 1 sec.

---

### 4.5 USER C-CARD MENU

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The chartplotter allows to copy information to an User C-CARD. You can also return the information to internal memory at a later time. This allows virtually unlimited storage.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "USER C-CARD" + 'ENTER'

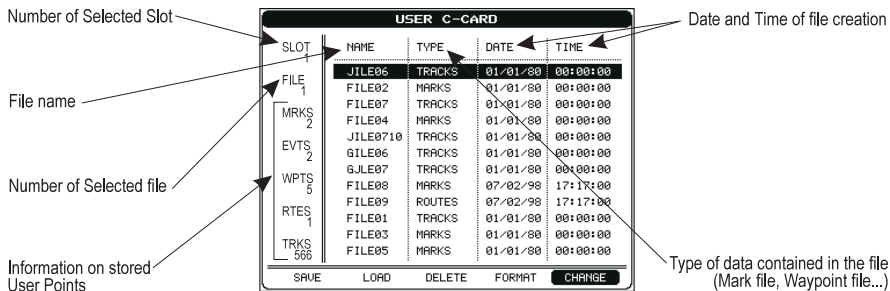


Fig. 4.5 -User C-CARD Menu

## 4.5.1 SAVING FILE

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'USER C-CARD' + 'ENTER' + 'SAVE' + 'ENTER'

A window is opened to insert the file name and the type of data to save:

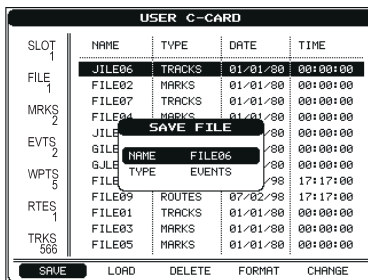


Fig. 4.5.1 - Save File function (I)

Select the file name. At first a default name is shown: use the cursor key to insert the name. Press 'ENTER'. Select the data type to save among "MARK", "EVENT", "ROUTE" or "TRACK".

### Note

When naming a file, you may have trouble finding a name that uniquely identifies the file's contents. Dates, for example, are often used in filenames; however, they take up several characters, leaving you with little flexibility. The secret is to find a compromise, a point where you can combine a date with a word, creating a unique filename. The maximum length of the filename is 8 characters. The characters may be numbers (0, ..., 9), letters (A, ..., Z) and spaces (for example legal identifiers are "ABC", "AA", "12121212", "A B C", "1 A 1", and so on).

Press 'CLEAR'. On the screen appears:

USER C-CARD				
SLOT	NAME	TYPE	DATE	TIME
1	JILE06	TRACKS	01/01/80	00:00:00
FILE 1	FILE02	MARKS	01/01/80	00:00:00
	FILE07	TRACKS	01/01/80	00:00:00
MRKS 2	FILE04	MARKS	01/01/80	00:00:00
	JILE0	TRACKS	01/01/80	00:00:00
EVTS 2	GILE0	MARKS	01/01/80	00:00:00
	GJLE0	MARKS	01/01/80	00:00:00
WPTS 5	FILE08	MARKS	07/02/98	17:17:00
	FILE09	ROUTES	07/02/98	17:17:00
RTES 1	FILE01	TRACKS	01/01/80	00:00:00
	FILE03	MARKS	01/01/80	00:00:00
TRKS 506	FILE05	MARKS	01/01/80	00:00:00
<div> <div>SAVE</div> <div>LOAD</div> <div>DELETE</div> <div>FORMAT</div> <div>CHANGE</div> </div>				

Fig. 4.5.1a - Save File function (II)

## 4.5.2 LOADING FILE

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'USER C-CARD' + 'ENTER' + 'LOAD' + 'ENTER'

Before pressing 'ENTER', choose file name in the list shown on the screen using the cursor key.

## 4.5.3 DELETING FILE

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'USER C-CARD' + 'ENTER' + 'DELETE' + 'ENTER'

A warning window is shown, select "YES" and press 'ENTER' to confirm deletion (select "NO" otherwise). This operation remove old or unnecessary files to clean up your User C-CARD. Remember that this option permanently erases the file.

## 4.5.4 FORMATTING USER C-CARD

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'USER C-CARD' + 'ENTER' + 'FORMAT' + 'ENTER'

A warning window is shown, select "YES" and press 'ENTER' to confirm the formatting (select "NO" otherwise). The format of User C-CARD must be done before using a new User C-CARD: this operation prepares the User C-CARD to receive and store information.

## 4.5.5 CHANGING USER C-CARD

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'USER C-CARD' + 'ENTER' + 'CHANGE' + 'ENTER'

Allows to change the User C-CARD.

---

## 4.6 C-LINK

---

C-Link system is a feature which allows to sharing the same cartographic data between two chart plotter units (CP) linked via serial I/O port.

In order to activate C-Link function, a “MAX data C-CARD” (called REGULAR C-CARD) must be inserted into one of the two chart plotters and a special MAX data C-CARD (called MIRROR C-CARD) must be inserted on the other chart plotter.

The two MAX data C-CARDS must have the same code and revision. So, the MIRROR C-CARD can be utilized only on a chart plotter linked to another chart plotter provided with the equivalent REGULAR C-CARD.

It is important to point out that the two chart plotters must have the update s/w versions that allow C-Link function.

### 4.6.1 HOW C-LINK SYSTEM WORKS

When the CP is powered up, it switches into the “Stand-Alone Mode”. In this work mode, the CP unit periodically scans all the available C-CARD slots searching for MIRROR C-CARDS.

When one or more MIRROR C-CARD is found (in one or both CPs) a special connection is established between the CPs to abilitate the MIRROR C-CARDS. If a regular C-CARD which has previously activated a MIRROR C-CARD is removed, even the MIRROS card will be not read anymore on the other unit.

---

## 4.7 C-LINK NAVIGATION DATA TRANSFER

---

This function allows transferring C-Link navigation data (Route Name, Destination ID & Position, Next Waypoint ID & Position, Total Route length, Fuel Consumption Rate, ETA, TTG etc.) (Hereinafter “c-link navigation data”) between two chart plotters linked through the C-Link system.

The chart plotters can be set to operate in two modes:

- MASTER mode (Primary Chart Plotter that sends data)
- SLAVE mode (Secondary Chart Plotter that receives data)

When the navigation is activated on the Master chart plotter, the C-Link navigation data will be continuously sent to the Slave until the navigation is active. If the Master is navigating to a Single Destination, the Slave will show the Destination position and activate the navigation to it.

If the Master is navigating to a Route, the Slave will show the Route Leg composed by the Destination and the Waypoint after the Destination (Next Waypoint) and activate the navigation to it. Any variation to the current C-Link navigation data will be transferred from the Master to the Slave. The Slave will be provided with a few dedicated pages to show the C-Link navigation data received from the Master.

## 4.7.1 OPERATIONS

### 4.7.1.1 Introductory elements

It is important remark, once more, that this function does not transfer the whole route but just the information relative to the navigation. Such information will be removed from the Slave Chart Plotter as soon as the navigation is terminated.

C-Link navigation data is exchanged by using two NMEA-0183 C-MAP proprietary sentences: \$PCMPN,1 and \$PCMPN,2.

When the navigation is activated on the Master, it starts outputting the C-Link navigation data. If the Slave is connected, all c-link navigation data received are stored in its memory and the navigation is started.

The information sent by the Master consists of the following values:

- Navigation mode (To Single Destination / to a Route )
- Route Name (\*)
- Destination ID
- Destination Position
- Next Waypoint ID (\*)
- Range from Destination to next Waypoint (\*)
- Bearing from Destination to next Waypoint (\*)
- Route Length (\*)
- Distance from Destination to Last Route Waypoint (\*)
- Remaining Route Legs (\*)
- Planned Cruising Speed
- Average Fuel Consumption
- Initial Fuel Load

C-Link navigation data can refer to:

- Single Destination navigation
- Route Following navigation.

Values identified by (\*) are sent only for Route Following navigation.

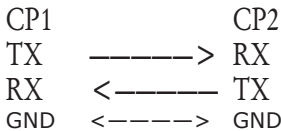
The Destination Icon, Navigation leg (Fix Position to Destination), the Next Waypoint Icon and all other relevant c-link navigation data will be shown on the



Slave chart plotter. Any variation of the C-Link navigation data on the Master will be communicated to the Slave so to keep data aligned on both devices.

#### 4.7.1.2 C-Link serial connection

The two chart plotters should be connected via serial ports. Any of the available ports can be used, the software will recognize automatically the serial ports used. A typical connection is as follows:



#### 4.7.1.3 Master Chart Plotter

##### Operating mode

To select the Master mode (Primary Station) follow the procedure:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Primary Station" + 'ENTER'

Master mode is the default factory setting. All regular chart plotters' functions are allowed. As soon as the Destination is placed, the master chart plotter will start transmitting all C-Link navigation data,

In Master mode the C-Link navigation data received from the NMEA port is ignored. So, if the two chart plotters are both operating in Master mode, the C-Link navigation data sent by the other chart plotter never processed.

Under such condition if the navigation is activated on one of the two chart plotters, a warning message will be shown to notify that the C-Link navigation data will be ignored by the other chart plotter.

#### 4.7.1.4 Slave Chart Plotter

##### Operating mode

To select the Slave mode (Secondary Station) follow the procedure:

- 'MENU' + "BASIC SETTINGS" + 'ENTER' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secondary Station" + 'ENTER'

When Slave mode is set, the chart plotter cannot manipulate the C-Link navigation data anymore.

##### Stop current navigation

If the navigation was already active, it will be disabled as soon as Slave mode is set.

An appropriate warning message will be shown to notify that the Navigation is already active and to confirm whether Slave mode can be set.

### **Inhibit Navigation operation**

As soon as Slave mode is set, the destination cannot be placed anymore either the C-Link navigation data is received from the Master or not. Also, when the C-Link navigation data is received from the Master, it will not be allowed to deactivate the Navigation.

### **Inhibit Route following**

While navigating to the route received from the Master the destination is reached (either applying distance or perpendicular criteria), the destination will not be moved to the next Waypoint on the route.

### **MOB handling**

If the Navigation to the external destination is active and the MOB key is pressed on the Slave Chart Plotter, the MOB is placed but the navigation to the MOB is not activated.

### **Notes**

While navigating to the external destination the Operating Mode is switched to Master mode, the navigation to the external destination will be terminated. An appropriate warning message will be shown to notify that the Navigation to the external destination is active and to confirm whether Slave mode can be set. Setting Slave mode, the C-Link navigation data will be deleted.

The C-Link navigation data are deleted at Power Off.

#### **4.7.1.5 C-Link navigation data: Acquisition and Display**

As soon as the C-link navigation data is received, the Slave parses the information received and executes the relative actions depending on its current working status.

#### **Important**

---

*When the Navigation to the external Destination is activated, the Slave Chart Plotter will show all relevant c-link navigation data exactly like when the destination is not the external one: (Destination Name, DST and BRG to Destination, calculate XTE, calculate TTG etc). These values will be displayed all places where required and they will be used to format NMEA-0183 output data.*

---

#### 4.7.1.6 Graphical representation on Map Display



Fig. 4.7.1.6 - Graphical Displaying

#### 4.7.1.7 Route Data Report

When the Navigation to the External Route is received, it will be possible to display the information related to the External Route by entering the Route Data Report.

External Route: <b>ROUTE001</b>				
Cruising Speed:	12.5 kn	Fuel Consumption Rate:	8.0 l/h	
Total Route length:	71.19 Nm	Total Fuel Consumption:	45.5 l	
Waypoints in Route:	4	Initial Fuel Load:	255 l	
Remaining Waypoints:	4	Remaining Fuel:	209 l	
	DST (nm)	TTG: (hh:mm)	ETA: (hh:mm)	Cons Lit
To Dest	11.93	00:57	11:54 AM	7.4
To Next Wpt	15.97	01:16	1:10 PM	12.3
To Last Wpt	83.12	05:41	6:54 PM	54.4

Fig. 4.7.1.7 - External route on Route Data Report

- External Route : Name of the External Route (from PCMPN,0)
- Cruising Speed : Planned Cruising Speed (from PCMPN,1)
- Fuel Consumption Rate : Planned Fuel Consumption Rate (from PCMPN,1)
- Total Route length Route: Length from First to Last Wpt. (from PCMPN,1)
- Initial Fuel Load : Volume of Fuel available before the navigation was started (Liters)
- Total Fuel Consumption : Calculated Fuel consumption to navigate the whole route.
- Waypoints in Route : No. of Wpts in the Route (from PCMPN,1)
- Remaining Waypoints : No. of Wpts from Dest to Last Wpt (from PCMPN,1)
- Distance to Destination : Distance from Ship to Destination (Calculated)

- Distance to Next Wpt : Distance to travel from ship to the Wpt after the Destination (calculated: Distance to Dest + Next Route Leg length)
- Distance to Last Wpt : Distance to travel from ship to the End of the Route (Calculated: Distance to Dest + Distance From Dest to last Wpt received from PCMPN,1)
- TTG To Destination : Estimated Time to travel the “Distance to Last Wptt”. Calculated using Cruising Speed.
- TTG To Next Wpt : Estimated Time to travel the “Distance to Next Waypoint” Calculated using Cruising Speed.
- TTG to Last Wpt : Estimated Time to travel the “Distance to Last Wpt”. Calculated using Cruising Speed
- ETA to Destination : Estimate Time of Arrival to the Destination Point. Calculated: Current Time + “TTG To Destination”
- ETA to Next Waypoint : Estimate Time of Arrival to the Waypoint after the Destination. Calculated: Current Time + “TTG To Next Waypoint”
- ETA to Last Wpt : Estimate Time of Arrival to the End of the Route. Calculated: Current Time + “TTG To Last Wpt”

### 4.7.1.8 Quick Info

#### Route Navigation: Quick Info on the Destination

EXTERNAL Rte			
[ROUTE001 ]			
	DST	TTG	Cons
	(nm)	(hh:mm)	Lit
Dest	11.93	00:57	7.41
Last	83.12	05:41	54.4
Route Length: 71.19 Nm			

Route Name, DESTINATION ID Wpt1/4

Distance, TTG and Consumption from Ship to Dest  
Distance, TTG and Consumption from Ship to Last Wpt

Fig. 4.7.1.8 - Quick Info on Destination

#### Quick info on Single Destination

EXTERNAL DESTINATION	
WPT002	
DST	BRG
7.41 Nm	082° M

Fig. 4.7.1.8a - Quick Info on Single Destination

# 5

## Advanced Settings

---

The Advanced Settings menu allows the user to control the advanced functions of the chartplotter. The functions are organized into menus. For example all options related to the Fix are in a menu called Fix. For menus there is not an explanation because they are in the previous Chapters, so for the Map Setting menu see Par. 3.5, for the Track menu see Par. 4.4, for the Route menu see Par. 4.1.2, for the User Points menu see Par. 4.1.1.9 and for the User C-CARD menu see Par. 4.5.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER'

Once you are in the Advanced Setting menu, use your cursor key to highlight the item and press 'ENTER' to activate or to proceed to the next selection menu.

---

### 5.1 SETUP

---

The Setup menu allows to enable or disable the general options for handling of the chartplotter. For the Auto Info option see par. 3.5.3.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER'

#### 5.1.1 TIME REFERENCE

Sets UTC or Local Time. The default setting is UTC.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "TIME REFERENCE" + 'ENTER'

#### 5.1.2 TIME FORMAT

Sets you preferred time between 12 hour and 24 hour. The default setting is 24 hours.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "TIME FORMAT" + 'ENTER'

### 5.1.3 DATE FORMAT

Sets your preferred date between MM-DD-YY (month-day-year) and DD-MM-YY (day-month-year). The default setting is MM-DD-YY.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "DATE FORMAT" + 'ENTER'

### 5.1.4 WIND SPEED

Selects the Wind Speed unit among Kts = Knots, m/s and Km/h = kilometers per hour. The default setting is Kts.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "WIND SPEED" + 'ENTER'

### 5.1.5 BEEPER

Turns On/Off the sound after pressing a key ("beep"). The default setting is On.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "BEEPER" + 'ENTER'

### 5.1.6 EXTERN WAYPOINT

The coordinates of a Waypoint, received from a GPS connected to the chartplotter, can be stored into the chartplotter, if the GPS is NMEA-0183 protocol compatible and supports the \$BWC sentence (this symbol remains on the screen for 30 seconds). You may save it by placing a Waypoint or a Mark onto that symbol. As soon as the chartplotter receives another \$BWC sentence with the coordinates of a new Waypoint, the symbol moves to the new point. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "EXTERN WPT" + 'ENTER'

### 5.1.7 BACKLIGHT TIMEOUT

Disables (Off) or sets the desired value (among 1, 3, 5, 10 minutes) for the backlight timeout of the chartplotter. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SETUP" + 'ENTER' + "B. LIGHT TIMEOUT" + 'ENTER'

---

## 5.2 FIX

---

The Fix menu allows to handle the functions related to the fix.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER'

### 5.2.1 FIX CORRECTION

Turns On/Off the Correction from the positioning system. If the new Correction is calculated, but the Correction is not enabled, the ship's position is not changed. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "FIX CORRECTION" + 'ENTER'

### 5.2.2 COMPUTE CORRECTION

Corrects fixes from the positioning instrument. By placing the cursor on the ship's real position and selecting this option, the error is calculated and internally memorized for appropriate correction, but not applied.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "COMPUTE CORRECTION" + 'ENTER'

### 5.2.3 CORRECTION OFFSET

Manual correction of fix position.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "CORRECTION OFFSET" + 'ENTER'

A window with the cursor coordinates appears: insert the preferred value and press 'ENTER'.

### 5.2.4 POSITION FILTER

Turns On/Off the Position Filter. In case of a jittering fix this option makes the ship's position more stable and the track smoother. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "POSITION FILTER" + 'ENTER'

### 5.2.5 SPEED FILTER

Turns On/Off the Speed Filter. When it is On, you can filter the speed of the ship, to optimize it. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "SPEED FILTER" + 'ENTER'

### 5.2.6 FILTER DUMP

Inserts the value for the Filter Dump in the range [500 - 12000]. The default setting is 500.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "FILTER DUMP" + 'ENTER'

### 5.2.7 DEAD RECKONING

Enables (On) or disables (Off) the Dead Reckoning. The default setting is Off.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "DEAD RECKONING" + 'ENTER'

### 5.2.8 STATIC NAVIGATION

Sets up a threshold for the speed. When the speed received from the positioning device is under that threshold, the chartplotter displays zero speed. The default value is 0.0 Knots.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "FIX" + 'ENTER' + "STATIC NAVIGATION" + 'ENTER'

---

## 5.3 NAVIGATE

---

The Navigate menu allows to handle the functions related to navigation.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER'

### 5.3.1 COORDINATE SYSTEM

Sets your preferred Coordinate System among ddd mm ss, ddd mm.mm, ddd mm.mmm, UTM, OSGB, TD. The default setting is ddd mm.mmm.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER'

If TD is selected on the screen a new menu appears:

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "COORDINATE SYSTEM" + 'ENTER' + "TD" + 'ENTER'

**Chain:** Selects the preferred chain. The default setting is 9970.

**Pair:** Selects the pair of stations in the selected chain. The default setting is W X.

**ASF 1/2:** Sets the ASF (Additional Second Factor) for the slave in the selected chain. The default setting is 0.

**Alter:** Turns On/Off the Alternate Solution in the chain. The default setting is Off.

### 5.3.2 FIX DATUM

Selects the Fix Datum among 130 items. WGS-84 is the default Fix Datum.



- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "FIX DATUM" + 'ENTER'

### 5.3.3 MAP DATUM

Selects the Map Datum among 130 items. WGS-84 is the default Fix Datum.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "MAP DATUM" + 'ENTER'

### 5.3.4 MAP ORIENTATION AND RESOLUTION

Selects the orientation of your chart according to your personal needs (see Par. 3.5.1.3 for more information). The Orientation Resolution is the resolution angle for the Map Orientation, range [5, 60] degrees. The default setting is 30°.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "ORIENT. RESOLUTION" + 'ENTER'

### 5.3.5 ROLLING ROAD SCALE

Sets you preferred Rolling Road Scale among 0.2, 0.5, 1.0, 2.0, 4.0, 10.0. The default setting is 0.2.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "ROLL ROAD SCALE" + 'ENTER'

### 5.3.6 RESET TOTAL AND PARTIAL TRIP

Resets the partial or total distance traveled by the ship from the first activation of the chartplotter or starting from the values reset. The partial or total trip value is shown on the top of the Navigation Page.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET PARTIAL TRIP" + 'ENTER'
- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "NAVIGATE" + 'ENTER' + "RESET TOTAL TRIP" + 'ENTER'

---

## 5.4 COMPASS

---

The Compass menu sets the desired value for Bearing and Magnetic Variation, and selects the Compass Calibration page.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER'

### 5.4.1 BEARINGS

Selects either degrees magnetic or true. If magnetic readings are selected the variation is computed automatically for every zone as soon as the chart is displayed. The default setting is Mag.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER' + "BEARINGS" + 'ENTER'

### 5.4.2 VARIATION

It is possible to calculate the Magnetic Variation in an Automatic or manual mode, by inserting the step for calculation of Magnetic Variation. The default setting is Automatic.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER' + "VARIATION" + 'ENTER'

### 5.4.3 CALIBRATION

The variation table is used to match magnetic value readout on the chartplotter comparable with the value given by the compass of the boat. In other words, since the compass of the boat must be compensated (due to the iron masses, ...), we use the same values given by the chartplotter. This means that, for example, if the BRG to the next Waypoint readout in the chartplotter display is "X" Mag degree, if you steer the boat reading "X" Mag degree from the compass, you are driving well toward the next Waypoint.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "COMPASS" + 'ENTER' + "CALIBRATION" + 'ENTER'

---

## 5.5 ALARMS

---

The chartplotter provides alarm settings for various functions. Here you can set the system for your navigational requirements.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER'

### 5.5.1 ARRIVAL ALARM

Specifies the radius of a circle around the Waypoint of a route: when your vessel reaches this circle the alarm sounds. You can disable (Off) the Arrival Alarm or insert value. The default setting is 1.00 Nm.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "ARRIVAL ALARM" + 'ENTER'

### 5.5.2 XTE ALARM

Disables the XTE Alarm (Off) or selects the desired value. The default setting is Off.

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'ALARMS' + 'ENTER' + 'XTE ALARM' + 'ENTER'

### 5.5.3 ANCHOR ALARM

This function allows inserting of the limit of anchor dragging; beyond that, the alarm is activated. The chartplotter computes the distance between the current GPS position and the GPS position saved at the activation of the anchor alarm in the menu. If the computed distance exceeds the value set in the menu, the chartplotter shows the alarm message and starts the acoustic alarm. The default setting is Off.

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'ALARMS' + 'ENTER' + 'ANCHOR ALARM' + 'ENTER'

### 5.5.4 DEPTH ALARM

Specifies the depth or disables the Depth Alarm.

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'ALARMS' + 'ENTER' + 'DEPTH ALARM' + 'ENTER'

### 5.5.5 GROUNDING ALARM

The chartplotter is provided with a function that, by querying the map's data, verifies potential danger to navigation due to shallow water, land, rocks, obstructions and shoreline constructions. The maps are scanned periodically (every 10 seconds).

When the Grounding Alarm is active, the chartplotter scans an area in front of the boat. This area is identified by a triangle drawn in front of the boat icon whose direction is determined by the current boat heading. The length of the triangle is user selectable and its angle is 30 degrees. If any of the above objects are found, the chartplotter notifies the danger on a dedicated warning message box in the Grounding Alarm Report page.

The Grounding Alarm is switched Off by default after a Master Reset. Once the Grounding Alarm has been activated, a warning message is shown.

- 'MENU' + 'ADVANCED SETTINGS' + 'ENTER' + 'ALARMS' + 'ENTER' + 'GROUNDING ALARM' + 'ENTER'

#### **Note**

---

*The Grounding Alarm function only operates with the new C-CARDS. It also affects the speed of the redraw of the screen. If this function is not used it maybe disabled.*

---

## 5.5.6 GROUNDING ALARM RANGE

Allows setting the length of the sector to be detected among 0.25, 0.5, 1.0 Nm. The default setting is 0.25 Nm. When any of the searched objects is found in the scanned area, a tick marker is printed on the relative box in the Grounding Alarm Report page to identify which dangerous objects have been currently detected.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "GROUNDING ALARM RANGE" + 'ENTER'

## 5.5.7 GROUNDING ALARM REPORT

Allows displaying the report of the dangerous objects currently detected.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "ALARMS" + 'ENTER' + "GROUNDING ALARM REPORT" + 'ENTER'

---

## 5.6 SIMULATION MENU

---

The built-in Simulator function allows you to become proficient in the use of the chartplotter. No current position fix is required because the chartplotter simulates position data internally.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER'

### 5.6.1 SIMULATION MODE

Once the settings are selected, turn on the Simulator:

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "ACTIVATE SIMULATION" + 'ENTER'

To turn On the Simulation select Off. The default setting is Off.

### 5.6.2 SPEED

To start the simulator you can insert the Speed value. Using the cursor key select the preferred Speed and press 'ENTER'. The default setting is 01.0 Kts.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "SPEED" + 'ENTER'

### 5.6.3 HEADING

To start the simulator you can insert the Heading value. Using the cursor key select the preferred Heading and press 'ENTER'. The default setting is 000° M.

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "HEADING" + 'ENTER'

#### 5.6.4 DATE AND TIME

- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "DATE" + 'ENTER'
- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "TIME" + 'ENTER'

Using the cursor key insert the preferred Date and Time and press 'ENTER'.

#### 5.6.5 CURSOR CONTROL

- Enables (On)/disables (Off) the cursor control. The default setting is Off.
- 'MENU' + "ADVANCED SETTINGS" + 'ENTER' + "SIMULATION" + 'ENTER' + "CURSOR CONTROL" + 'ENTER'

---

### 5.7 C-STAFF

---

The C-Staff functions are based on STAFF Concept<sup>®</sup> (Satellite Tracking Aided Fleet Fishing). The STAFF Concept<sup>®</sup> is designed for professional fishing purpose to allow monitoring the position of the vessels of a fleet from each vessel (the fleet may have until 20 vessels max).

- 'MENU' + "C-STAFF" + 'ENTER'
- For more information see the specific User Manual.

---

### 5.8 C-METEO

---

To set up the information relative to the display of the weather information on the map.

- 'MENU' + "C-METEO" + 'ENTER'
- For more information see the specific User Manual.

---

## 5.9 FISH FINDER MENU

---

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available.

- 'MENU' + "FISH FINDER SETUP" + 'ENTER'

For more information see the specific User Manual.

# 6

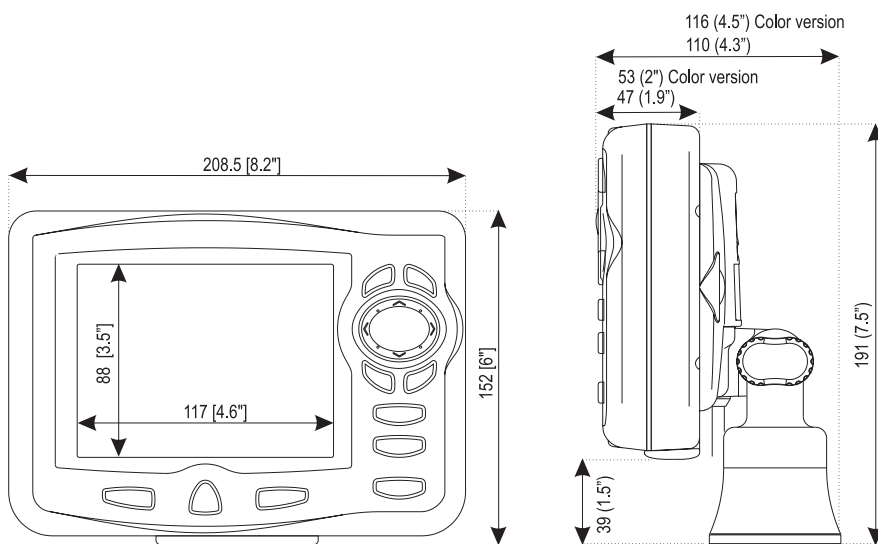
## For the Technician

---

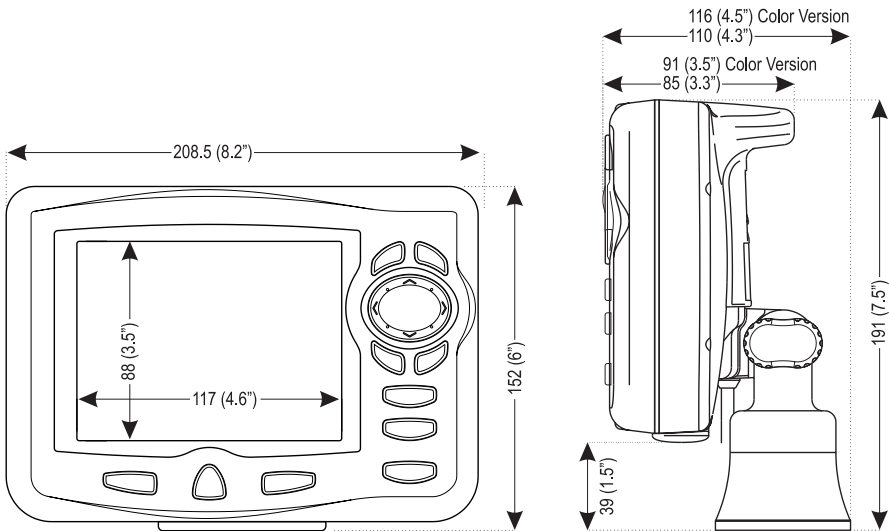
---

### 6.1 DIMENSIONS

---

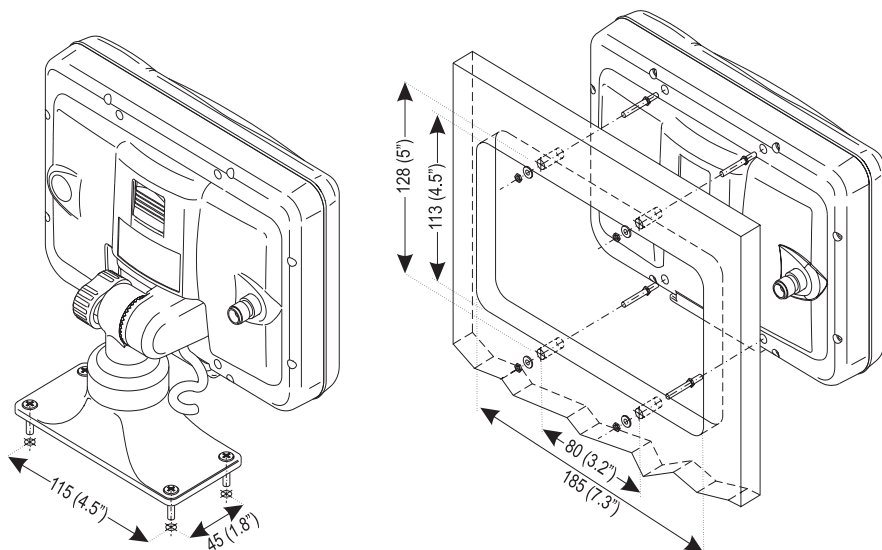


*Fig. 6.1 - EXCALIBUR models Dimensions*



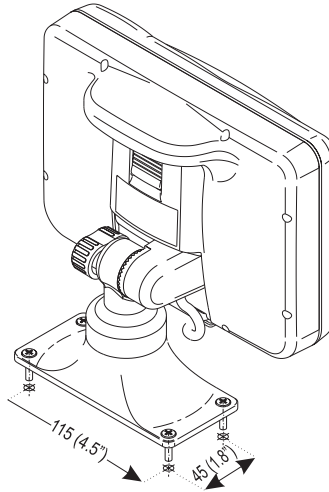
*Fig. 6.1a - COMPACT models Dimensions*

## 6.2 INSTALLATION AND REMOVING



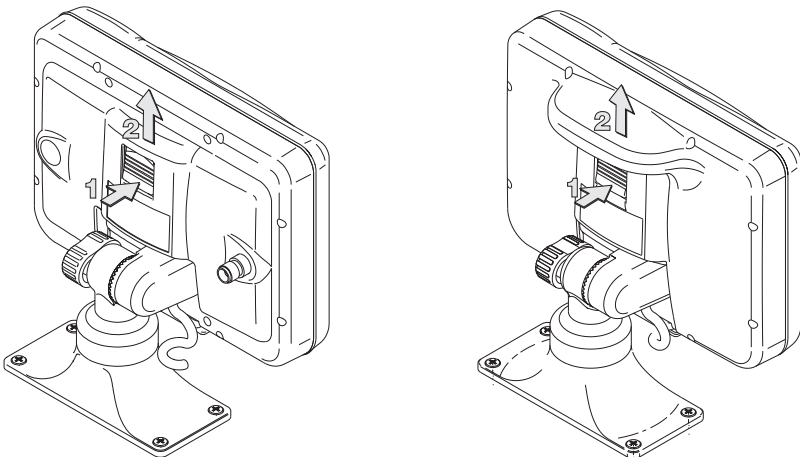
*Fig. 6.2 - EXCALIBUR models Installation*





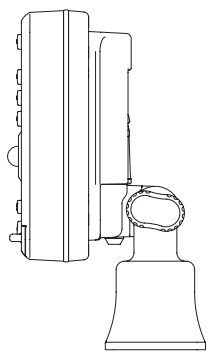
*Fig. 6.2a - COMPACT models Installation*

To remove the chartplotter press the bracket button (1) as indicated in the following Fig. 6.2b (left side of the picture for EXCALIBUR models and right side of the picture for COMPACT models) and then eject to the top the chart plotter (2).



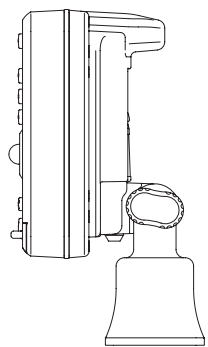
*Fig. 6.2b - EXCALIBUR models (left side) and COMPACT models (right side) removing*

# 6.3 EXTERNAL WIRING



QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35 Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	INPUT1-	NMEA0183/C-COM
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	NMEA0183/C-COM
PINK	OUTPUT3+	NMEA0183/180/180CDX/C-COM
BLUE	Signal -(common/return)	SIGNALS RETURN

Fig. 6.3 - External Wiring for chartplotter with external GPS receiver



QUICK DISCONNECT BRACKET CABLE		
WIRE COLOR	DESCRIPTION	FUNCTION
BLACK	GND/COMMON	POWER SUPPLY GND
RED	POWER +10-35 Vdc	POWER SUPPLY+
WHITE	INPUT1+	NMEA0183/C-COM
GREEN	INPUT1-	NMEA0183/C-COM
YELLOW	OUTPUT1+	NMEA0183/180/180CDX/C-COM
BROWN	INPUT2+	NMEA0183/C-COM
GRAY	OUTPUT2+	NMEA0183/180/180CDX/C-COM
ORANGE	INPUT3+	RTCM 104 INPUT
PINK	OUTPUT3+	INT. GPS OUTPUT NMEA0183
BLUE	Signal -(common/return)	SIGNALS RETURN

Fig. 6.3a - External Wiring for chartplotter with internal GPS receiver

# 6.4 TYPICAL CONNECTIONS

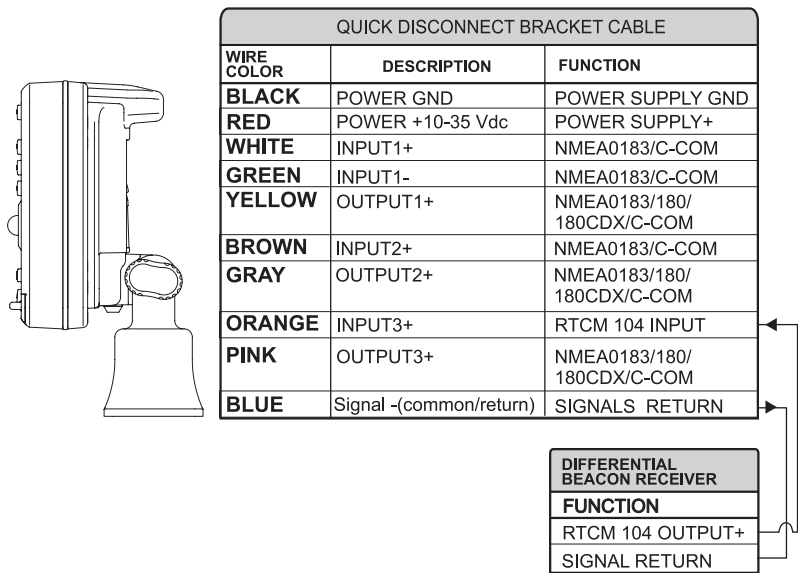


Fig. 6.4 - Beacon Receive Connection for chartplotter with internal GPS receiver

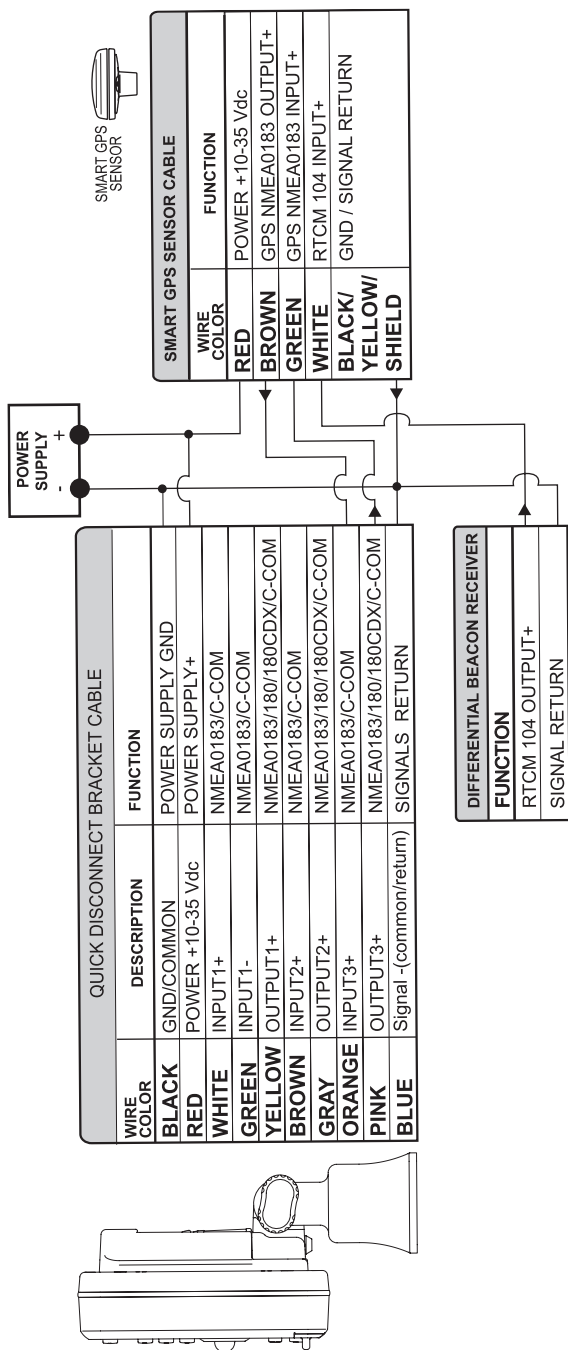


Fig. 6.4a - GPS Connection on Port 3 for chartplotter with external GPS receiver

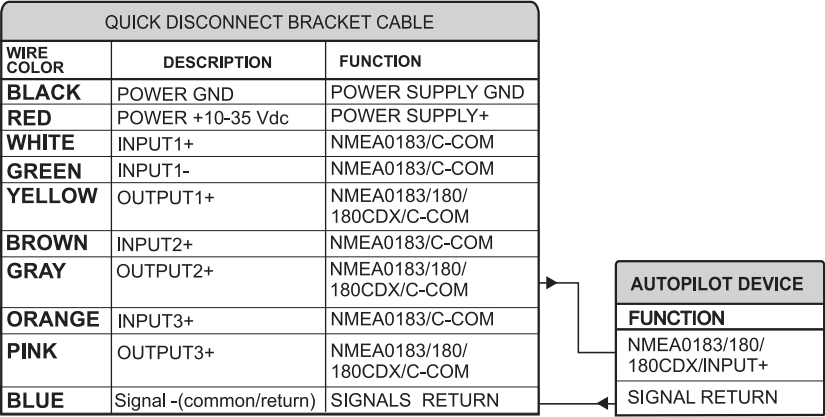


Fig. 6.4b - Autopilot Connection on Port 2

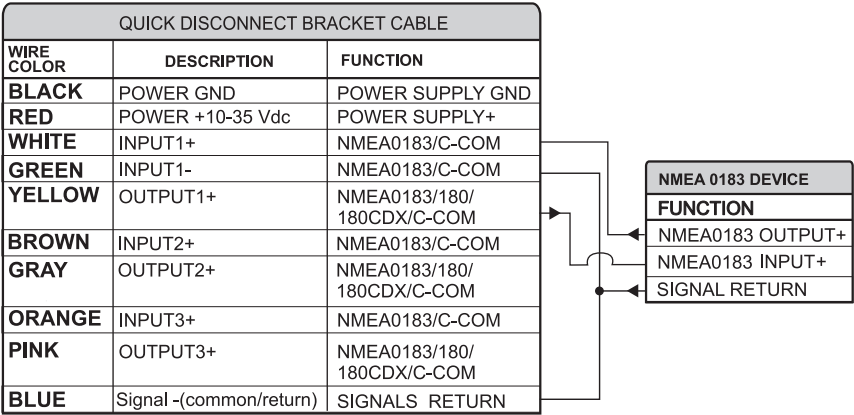


Fig. 6.4c - External NMEA Connection on Port 1

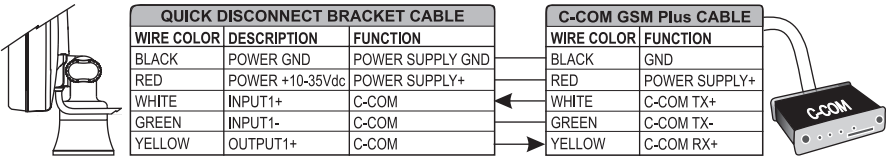


Fig. 6.4d - C-COM Connection on Port 1

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## 6.5 TROUBLESHOOTING

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The following is a brief guide to some of the problems you may experience while using the chartplotter with common solutions.

### 6.5.1 PROBLEMS AND SOLUTIONS

**The chartplotter does not turn On** — Make sure that the correct voltage (10-35 volt dc) is present. Check also that the polarity is correct. Refer to the Par. 2.2.

**The chartplotter does not turn Off** — If, after a 'POWER' pressure (for at least 3 seconds) the chartplotter does not turn Off, then turn Off the voltage.

**The chartplotter does not respond to any command** — Try to turn Off, and then turn On. If the problem persists, erase the memory (see Par. 6.6.1).

**The chartplotter does not get a valid fix** — Make sure that no metal obstacle is placed around the chartplotter acting as a shield for the antenna. If, after 15 minutes, the chartplotter does not get the fix, turn it Off and On again.

**The chartplotter screen becomes very dark after a long exposure to direct sunlight** — Control the contrast (see Par. 2.3).

### 6.5.2 HELP

If you want to activate a function, the chartplotter has an help on line:

- 'MENU' + 'Help' + 'ENTER'  
Use 'ZOOM IN' and 'ZOOM OUT' to select the previous and the next page.

### 6.5.3 IF YOU NEED ASSISTANCE

The list above (see Par. 6.4.1) should allow you to solve most of the operating problems you are likely to encounter. Simply disconnecting the chartplotter from power for a moment may solve your problem as well.

If this does not help, you can try one additional memory clear option. This is a factory default RAM Clear that should only be tried after all other attempts have been made. When using the RAM Clear feature, you will loose all user stored information and the chartplotter will default to factory settings. Before this step, you

have the option of saving user Marks, Track history and Routes to a User C-CARD (this is an optional purchase from your dealer). To perform a RAM Clear see Par. 6.6.1.

If you still need assistance, call your local dealer, reporting the Software Release and Cartography information available in the About page.

- 'MENU' + "About..." + 'ENTER'

### 6.5.3.1 World Background Charts

The internal background charts can be updated to include the MAX A and B level charts which provide improved marine data, rivers, lakes, terrestrial data (major streets, highways, railways, etc...), Nav-Aids, depth areas, territorial water areas, etc... by reading them from a special data C-CARDS (contact your local dealer). All units must have the WorldWide Background upload function that is activated from the system.

### Worldwide Background Update

The System Update menu is entered from the About page. To select this menu follow the procedure:

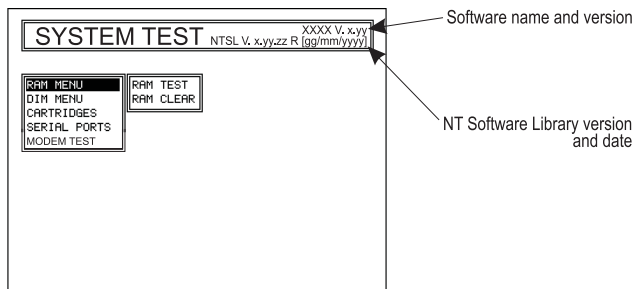
- Plug the special data C-CARD + 'MENU' + "About..." + 'ENTER' + 'MENU' + "Update Worldwide Charts" + 'ENTER'

---

## 6.6 SYSTEM TEST

---

If you have connected your position-finding device according to the instructions, and chosen the proper menu selection for your device, and are still having problems with your chartplotter, the extended auto-test should help determine the problem. Make sure the chartplotter is turned Off. While pressing and holding any other key, turn the chartplotter On. A new menu will appear on the display:



*Fig. 6.6 - System Test*

Use the cursor key to select the preferred test: this will display in reverse video and with the relative menu window. To choice the test press 'ENTER'. To exit from any submenu press 'CLEAR'. To exit from the System Test turn Off the chartplotter.

### 6.6.1 RAM MENU

This test verifies the integrity of the memories and if preferred during this test all the internal memory can be erased and the default setting restored.

#### ■ RAM Test

To verify the integrity of the RAM. If on the screen the message "ERROR" appears, the RAM is physically damaged.

#### ■ RAM Clear

To clear internal memory. If the chartplotter exhibits unusual behaviour, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM. This operation will erase all Marks, Events, Routes, stored track plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original default values. To confirm to clear RAM press 'ENTER' again (but if at this time you do not wish to clear RAM press 'CLEAR').

### 6.6.2 DIM MENU

To select the preferred value for contrast and backlight.

#### ■ Contrast

Each time you pressed the cursor key to right, the screen will decrease brightness, instead of to left it will increase brightness.

#### ■ Backlight

To set the backlight. Operates in similar mode as Contrast.

### 6.6.3 CARTRIDGES

To check the C-CARD and its connector.

#### ■ Background ROM

To test the WorldWideBackground. If there is not a malfunction, the code of the Background and the message "OK" are shown.

#### ■ C-CARD Test

To test the C-CARD. There are the possible situations:



1. if there is a C-CARD inserted in the slot and there is not a malfunction, the name of the C-CARD zone and the message "OK" are shown.
2. if there is a C-CARD inserted in the slot, but it is a damaged C-CARD, the name of the C-CARD zone and the message "Faulty" are shown.
3. if there is not any C-CARD inserted in the slot, the message "not present" is shown.
4. if there is an User C-CARD inserted in the slot, the message "USER C-CARD" is shown.

#### ■ C-CARD Connector

Indicates if there is a malfunction in the connector. It is used only in production.

### 6.6.4 SERIAL PORTS

If you are having problems receiving data from the position-finding instrument, this test should help determine the problem.

#### ■ Change Parameters

Allows to change the parameters of the serial interface. This menu allows to select the **Port** (Signal Source) between Port 1, Port 2 or Port 3, the **Baud Rate** between 4800 or 9600, the **Data Bits** (Word Length) between 7 or 8, the **Parity** between even, odd or none, the **Stop Bits** between 1 or 2.

#### ■ Input Data Display

Allows the chartplotter to act as a computer terminal and display the incoming data exactly as it received.

If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular receiver. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, you may have a broken connection and no data is being received.

Use 'ZOOM IN' to stop (or continue after pause) data displaying, 'ENTER' to show data in hex or ASCII mode (normal or small) and 'CLEAR' to exit.

### 6.6.5 MODEM TEST

To check the Modem connections. Press 'ENTER' to select the preferred Port (Port 1 or Port 2 FOR CHARTPLOTTER WITH INTERNAL GPS RECEIVER, Port 1, Port 2 or Port 3 FOR CHARTPLOTTER WITH EXTERNAL GPS RECEIVER) related to the connections made, to the Port that the Modem C-COM is connected.



# A

## Terms

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This section explains the terms that may be unfamiliar to the reader.

### ■ **Advanced Mode**

The chartplotter can operate in two different modes: Basic Mode and Advanced Mode. In Advanced Mode it is possible to have more available functions, for example it is possible to handle Waypoints.

### ■ **Altitude**

Altitude of GPS Antenna on the medium sea level.

### ■ **Arrival Time**

The estimated time of day you will reach your destination, based on your current speed and track from GPS.

### ■ **Attention Areas**

Attention Areas are areas in which special attention by the mariner is required, because of natural or man-made hazards, or sailing regulations and restrictions. Moreover a special symbol (!) is placed inside the area selecting On option. This is valid also for the categories: FISHING FACILITY, MARINE FARM/CULTURE, MILITARY PRACTICE AREA, RESTRICTED AREA, SEAPLANE LANDING AREA. When the area is small, it is identified only by the boundary.

### ■ **Azimuth**

The angular measurement from the horizon to a satellite or another object.

### ■ **Basic Mode**

The chartplotter can operate in two different modes: Basic Mode and Advanced Mode. In the first mode there is a restricted number of functions, and it is not possible to handle Waypoints, Marks, Events and A-B-C-D function.

### ■ **Beacon**

A prominent, specially constructed object forming a conspicuous vertical mark as a fixed aid to navigation.

### ■ **Buoy**

A floating object moored to the sea bottom in a particular (charted) place, as an aid to navigation.

### ■ **Buoys and Beacons**

Buoys and Beacons are used to indicate to mariners recommended or established routes, underwater dangers, restrictions and regulations. They can be lighted or not and - for the color chartplotter - are coloured according to their international code.

### ■ **BRG = Bearing**

It is the angle between the North (True or Magnetic) and a destination. It represents the direction to follow.

## ■ Chain

Selects the preferred chain. The Loran chains are groups of transmitting stations that use timed radio pulse transmissions. In each of these chains there is a master station and two or more slave or secondary stations. Stations belonging to a same chain transmit pulses in timing groups: a different time base identifies each chain. The time base of each chain is the Group Repetition Interval or GRI. This GRI identifies the chain in unique mode. For example the GRI = 4990 identifies the chain of Central Pacific zone.

## ■ COG = Course Over Ground

Direction of the path over ground actually followed by a vessel.

## ■ Correction

To compute fix error in automatic mode, place cursor on ship's real position and then follow the procedure (compute correction). It is also possible to compute the fix error in manual mode (correction offset). Once you computed the error, you can turn the fix correction On or Off.

## ■ Course Vector

The Course Vector is a graphical indication of the direction in which the Vessel is heading. The Course Vector origin is the vessel's position so the time line movement is synchronized with the vessels Icon. Course Vector course is given by the value of COG (Course Over Ground) and its length is proportional to the SOG (Speed Over Ground).

## ■ CTS = Course To Steer

The optimum direction the boat should be steered in order to efficiently make headway back to the courseline while also proceeding toward the destination Waypoint.

## ■ Cultural Features

Any man-made topographic feature as built-up area, buildings, roads, ....

## ■ Datum

The Latitude and Longitude lines printed on any map are based on certain models of the shape of the earth: these models are called Datum or Coordinate Systems. There are many different Datum in use, each one gives different Lat/Lon positions for an identical point on the surface of the earth.

## ■ Default

Indicates a value or a setting which is used if the user has not defined a particular value. You can modify this value using the menu settings.

## ■ Depth Lines

Imaginary lines connecting points of equal water depth.

## ■ DGPS = Differential GPS

Provides even greater positioning accuracy than standard GPS.

## ■ Event

User Point that refers to the ship's position. It is simply a way of marking where the boat is.

## ■ File

Collection of information (of the same type) stored on a User C-CARD. Each file must have a unique name, ideally one that describes its contents. Filenames are kept in a directory on each User C-CARD.

## ■ Goto

Sets a particular mark on the map, called Target or Destination.

## ■ GPS = Global Positioning System

It is a satellite based navigation system operated by the US Department of Defense. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions .

■ **HDG = Heading**

The horizontal direction in which a ship actually points or heads in any moment (see also COG).

■ **HDOP = Horizontal Dilution Of Precision**

It is the index for position-fixing accuracy. The smaller the HDOP value, the more accurately the position can be fixed

■ **Home**

In this operating mode (called also Navigate mode) all operations refer to the ship's position.

■ **Latitude**

The angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

■ **LAT/LON**

Coordinate system using Latitude and Longitude coordinates to define a position on earth.

■ **LOG**

Speed of the vessel relative to the water.

■ **Longitude**

The angular distance East or West of the prime meridian (Greenwich meridian) as measured by lines perpendicular to the parallels and covering at the poles from 0° to 180°.

■ **Loran**

The Loran Chains are groups of transmitting stations that use timed radio pulse transmissions.

■ **Magnetic Deviation**

The angle between the Magnetic North and the Compass North.

■ **Magnetic Variation**

The angle between the magnetic and geographic meridians at any place, expressed in degrees West or East to indicate the direction of magnetic North from true North. It changes from point to point, and (at the same point) with time.

■ **Mark**

Reference points related to cursor position.

■ **Natural Features**

Any topographic feature formed by the action of natural processes: coastlines, relief, glaciers, ...

■ **Navigate (mode)**

Operating mode (called also Home mode) all operations refer to the ship's position.

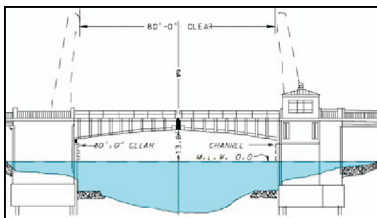
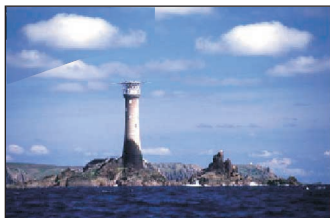
■ **NMEA-0183**

The NMEA-0183 Data Interface Standard was developed by the National Marine Electronics Association of America. It is an international standard that enables equipment from many different manufacturers to be connected together and to share information.

■ **Pictures and Diagrams**

The MAX data format allows assigning one or more image to any cartographic object. These *Pictures* are typically used to facilitate the identification of cartographic objects or places around the map: they can be the landscape layout nearby a harbor, the shape of a bridge or of a buoy etc.

On some objects, such as bridges, the image associated can represent the *Diagram* representing the shape of the objects and the various characteristics (length, height, type of bridge etc.).



*Fig.A.1 - Pictures and Diagrams*

## ■ OSGB = Ordnance Survey of Great Britain

A coordinate system describing only Great Britain. Generally used with GBR36 datum, which also describes only Great Britain. This coordinate system cannot be used in any other part of the world.

## ■ Port Info

The Port Info function is a combination of a new Port Info database containing all the relevant Safety and Navigational information normally found in good pilot books and a new presentation software which displays special Port Facility Symbols.

## ■ Ports & Services

Areas along shore with facilities for mooring, downloading and uploading of ships, generally sheltered from waves and winds. Port installations are piers, wharves, pontoons, dry docks, cranes... .

## ■ Route

Sequence of Waypoints connected by segments. Among the available Routes, only one is the active Route, which is shown by a straight line and arrows to indicate the direction.

## ■ RTCM = Radio Technical Commission for Maritime Services

The data format created by the Radio Technical Commission Maritime to transmit Differential GPS corrections.

## ■ SOG = Speed Over Ground

A calculation of the rate of movement of the ship over the ground.

## ■ Speed

The current velocity at which you are travelling, relative to a ground location.

## ■ Spot Sounding

Depth of the water in a specific and charted position

## ■ STR = Steering

The difference between COG and CTS. If COG is 25° and CTS is 30°, then STR is 5° Right.

## ■ Target

In order to tag on the chart the point, towards which the ship is Heading, you can use a special mark, called Target. When the Target is placed, all navigation data are referred to this Target.

## ■ TD = Time Difference

Loran positions are determined by precise timing of the intervals between reception of pulses transmitted by pairs of stations in the selected chain. Between any two stations a ship must be located somewhere along a line of possible positions where the measured Time Difference, TD, between arrival of pulses from those stations would be observed. The TD is measured from the time of reception of the master station signal to the time of reception of the slave station signal.

## ■ Tide

The periodic rise and fall of the surface of oceans, bays, etc., due principally to the gravitational interactions between the Moon and Earth.

## ■ Tide Info

The Tide Info feature is the combination of a new tide heights database that will be included within new C-CARDS and new features which calculate the tide graph for all primary and secondary ports world-wide. This function can calculate the tide heights for any past or future date and as a by-product of this calculation will also display the Maximum and Minimum Tide height and time for the day selected plus the times of Sunrise and Sunset. At some chart levels, the chartplotter will display a new Tide Diamond Symbol for every Port or tide point in the database covered by that particular C-CARD.

## ■ Tide & Currents

The new worldwide database with tidal stream information is now available with MAX C-CARDS. When data/time is available, Tidal stream arrows are shown on the charts, indicating the direction and strength of the Tide.

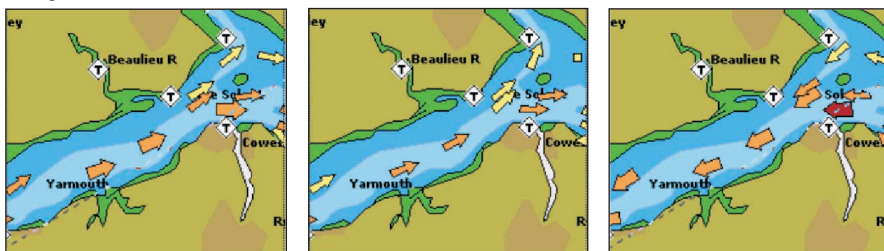


Fig. A.1a - Tides & Currents

If no data/time is available from the GPS or the chart plotter is not in Simulation mode, the icon on the map is generic one. The colour of the arrow denotes the strength of the current as follows:

0 to 0.1 kn -		Yellow
0.2 to 1.0 kn -		Yellow
1.1 to 2.0 kn -		Orange
2.1 to 3.0 kn -		Orange
3.1 to 9.9 kn -		Red

Fig. A.1b - Tides & Currents table

When the chart plotter receives a valid position fix, the Tide icons are shown on the charts on the basis of the current date and time: the screen displays and changes arrows as date/time changes.

## ■ Time Line

The location where the ship will be after the time set by the user.

## ■ Tracks & Routes

Recommended and established routes for ships at sea, including traffic separation schemes, deep water routes, ....

## ■ TRN = Turning

The difference between COG and BRG. If COG is 80° and BRG is 75°, TRN is 5° Left.

## ■ TTG = Time To Go

The estimated time needed to reach your destination, based on your current speed and the distance to destination.

## ■ User Point

Place on the chart identified by its coordinates and displayed on the screen with a reference symbol (see Mark, Waypoint and Event).

■ **UTC = Universal Time Coordinated**

A time scale based on the rotation of the earth that is used by most broadcast time services.

■ **UTM = Universal Transverse Mercator**

Metric Grid system used on most large and intermediate scale land topographic charts and maps.

■ **VAD = Value Added Data**

The Value Added Data (VAD) is a collection of additional cartographic objects which are not present on the original paper chart (from which the electronic chart derives). These objects have been obtained from other sources (that C-MAP believes to be reliable) and then merged to the electronic charts in order to provide more information useful for the navigation.

VAD object can be any cartographic objects and it can be distinguished from the official-chart-objects from the Quick Info. A dedicated icon is shown on the Quick Info window to indicate that the object queried is a VAD.

The same icon is also shown on the Full Info page and in addition the extended text Value Added Data is shown on the details of the VAD object.

■ **WAAS = Wide Area Augmentation System**

The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.

■ **Waypoint**

Any point to which one intends to navigate. A sequence of Waypoints makes up a Route plan .

■ **WGS-84 = World Geodetic System 1984**

Coordinates System or Datum developed by the Defense Mapping Agency (DMA).

■ **Zoom-In**

Shows more detail in a smaller area.

■ **Zoom-Out**

Operates similarly to zoom-in, but in the reverse, showing a wider but less detailed view.

■ **XTE = Cross Track Error**

The distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation leg being traveled.



# B

## Smart DGPS WAAS Receiver

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The Smart DGPS WAAS receiver is based on a ultimate 12 channel GPS engine that delivers accuracy better than three meters by decoding the GPS correction signals from the satellite-based WAAS (*Wide Area Augmentation System*). The GPS engine, interface electronics and the passive antenna are enclosed inside the water-proof plastic housing. This provides advanced state of the art GPS performance in an easy to use package.

### **Note**

*The characteristics of your Receiver could not be the same as the following explained. Contact the dealer the chartplotter was purchased from for more information.*

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## **B.1 TECHNICAL SPECIFICATIONS**

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### **B.1.1 PHYSICAL CHARACTERISTICS**

Color	: Ivory white
Dimensions	: 97mm in diameter x 32mm in height (flush mounted) or 61,5mm on flag-pole mount
Weight	: 160 grams (without cable)
Cable	: white 15 meter 8x28AWG cable

### **B.1.2 ELECTRICAL CHARACTERISTICS**

Input Voltage	: 10 Vdc to 35 Vdc unregulated
Power Consumption	: 1,2 Watt

### **B.1.3 GPS PERFORMANCE**

Geodetic Datum	: WGS84
Channels	: 12 parallel Channels
Frequency	: 1575.42MHz (L1, C/A code)


Acquisition Time (Approximate)  
Hot start : < 20 seconds  
Warm start : < 45 seconds  
Cold start : < 40 seconds  
DGPS Capability : RTCM SC104 v. 2, WAAS (North America), EGNOS (Europe), MSAS (Asia)  
Output Format : NMEA 0183 Version 2.0, Baud Rate 4800, N81  
Interfaces : Asynchronous serial output compatible with RS-232 (TTL voltage levels) RS-232 polarity

**B.1.4 ENVIRONMENTAL CHARACTERISTICS**

Operating Temperature: 0° C ~ +60° C  
Storage Temperature : -20° C ~ +85° C  
Relative Humidity : 95% non-condensing  
Water Resistance : 100% waterproof

**B.2 WIRING**

See the following table for a functional description of each wire in the GPS cable.

SMART GPS  
SENSOR

SMART GPS SENSOR CABLE	
WIRE COLOR	FUNCTION
RED	POWER +10-35 Vdc
BROWN	GPS NMEA0183 OUTPUT+
GREEN	GPS NMEA0183 INPUT+
WHITE	RTCM 104 INPUT+
BLACK/ YELLOW/ SHIELD	GND / SIGNAL RETURN

*Fig. B.2 - GPS Connection*

**B.3 SOFTWARE INTERFACE**

The GPS products interface protocol design is based on the National Marine Electronics Association's NMEA-0183 ASCII interface specification. These standards

are defined in "NMEA-0183 Version 2.0" (for more information see NMEA, [www.nmea.org](http://www.nmea.org)).

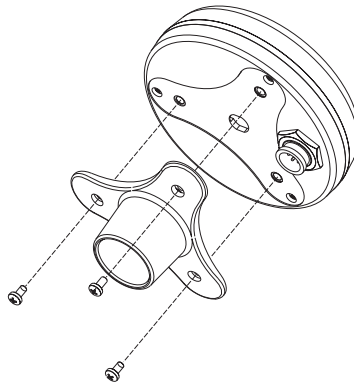
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## B.4 MECHANICAL CHARACTERISTICS & MOUNTING

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### B.4.1 INSTALLING

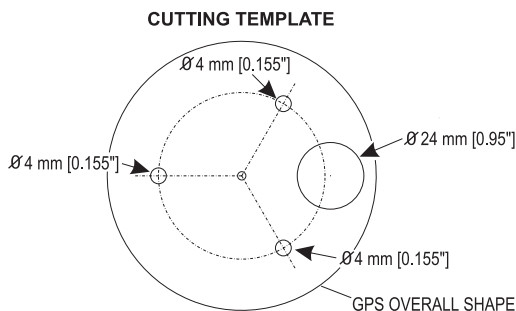
Choose a location for the antenna that has a clear view of the sky. Ensure there are no major obstructions or fixtures in the immediate proximity to the antenna. The antenna relies on direct "line of sight" satellite reception. If you are unsure that the chosen location is suitable it may be advisable to mount the antenna in a temporary manner to verify correct operation. The thread used on the antenna (1 inch, 14 TPI) is an industry standard thread used on a wide range of mounting brackets, including the swivel joints commonly used for angled surfaces. However due to the manufacturing process of these mounting brackets you may see that there is some slop when tightening down the antenna to the bracket. This is of no concern however as the antenna must be tightened until the antenna stops rotating on the antenna mounting bracket.



*Fig.B.4.1 - Installing GPS Antenna (I)*

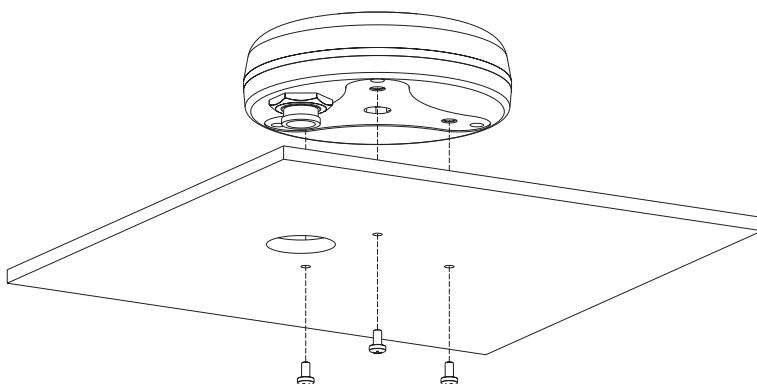
The antenna design also allows for easy flush mounting.

1. Apply the adhesive mounting template sheet in the area that was verified to receive satellite signal well.
2. Then, following template instruction, drill a 0,95 inch (24 mm) hole and three 0,155 inch (4 mm) holes.



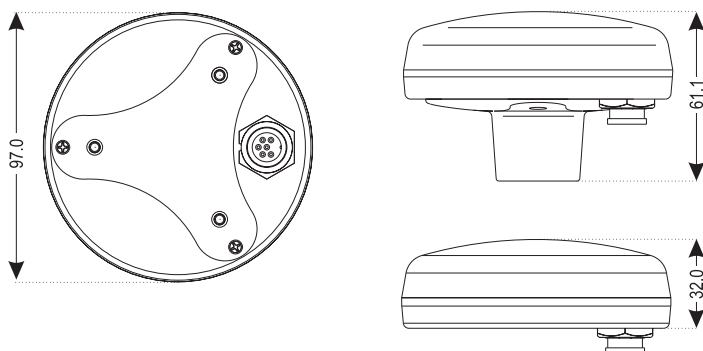
*Fig.B.4.1a - Installing GPS Antenna (II)*

3. Remove the template and let the cable go through the central hole.
4. Apply a small coat of RTV to the underside of the antenna.
5. Place the antenna and then screw it with the three M3 screws.



*Fig.B.5.4.1b - Installing GPS Antenna (III)*

## B.4.2 DIMENSIONS



*Fig.B.4.2 - GPS Antenna Dimensions*

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