

Chartnav 343

User's Guide

Issue 03





EMC Directive 89/336/EEC

This product has been designed to be compliant with the above Directive.

Maximum performance and compliance with the EMC Directive can only be ensured by correct installation. It is strongly recommended that the installation conforms with the following Standards:

SMALL CRAFT – ELECTRICAL SYSTEMS:

- a) ISO 10133 – Extra Low-Voltage DC Installations
- b) ISO 13297 – Alternating Current Installations

ISO – International Standards Organisation

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WELCOME

All of us at Cetrek would like to welcome you to the world of Cetrek Autopilot and Control Systems.

Cetrek has now been producing quality marine electronics for over 25 years and with the company's reputation for performance and reliability, you can relax knowing you have chosen your instrument wisely.

The Chartnav 343 chart plotter features a high resolution 8" LCD screen. Its clear displays and the simplicity of its operation make it one the most user-friendly plotters available.

Safety

The use of a Chartnav does NOT avoid the need for normal watchkeeping. The Chartnav should not be your only source of navigation. It should be backed up with traditional paper charts, navigational instruments and knowledge of their use.

We also remind you that in certain countries you are required by law to carry on board, and use, the officially published and approved nautical charts.

Document
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1. INTRODUCTION

1.1 The Chartnav 343

The Chartnav 343 is much more than a highly reliable, innovative chart plotter. It can share and access information via an NMEA data link. It can quickly step from the chart screen to three other information packed screens.

The Chartnav 343 on its own is a powerful charting aid.

Add a GPS or other position-finding instrument and the vessel's position and track can be displayed. Add to that an autopilot and you have an excellent navigation system.

The Chartnav 343 is available with a mono or colour screen.

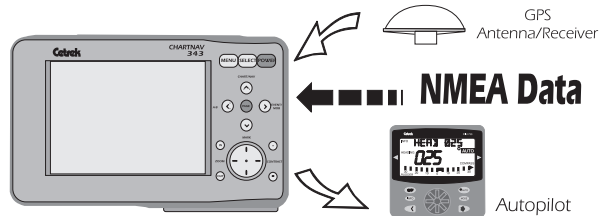


Figure 1 – System Interactions

1.2 A Word of Caution

You and your analytical abilities are the most important part of any navigation system. Do not assume that the co-ordinates you receive from your position-finding instrument are infallible. Remember also that the Electronic Charts are only as good as the paper charts they were digitized (copied) from. The Chartnav 343 is intended as a supplement to standard paper charts, not a replacement. A prudent navigator always double-checks his data against other navigational aids, the safety of your vessel and your crew is at stake.

1.3 For the New Chartnav User

In writing this manual we assume you are familiar with marine navigation and the use of latitude/longitude co-ordinates.

Learning how to use the Chartnav is best done before you find yourself at sea in a heavy fog! Remember your Chartnav 343, and any position-finding device or autopilot must be installed correctly for safe navigation.

THE CHARTNAV 343

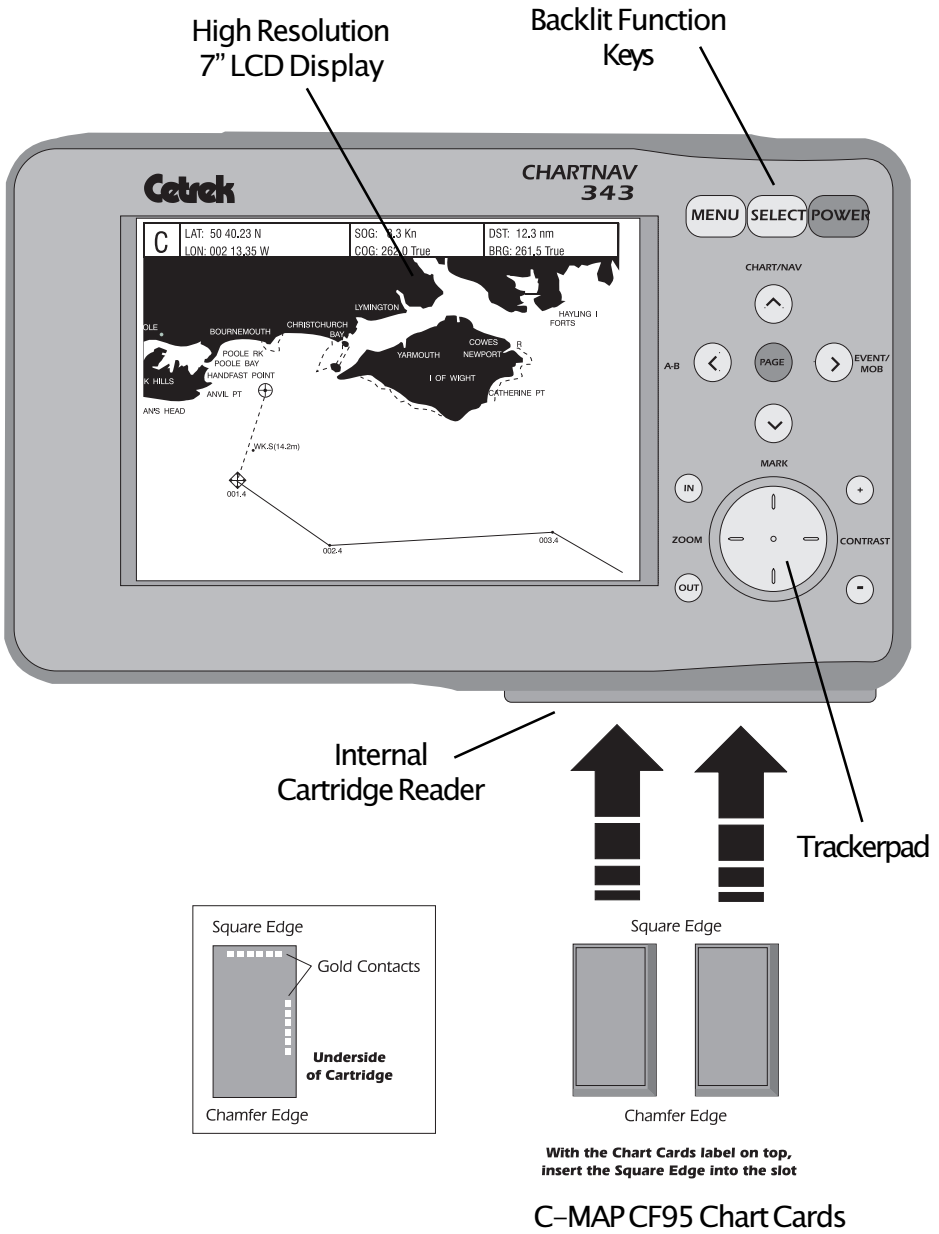


Figure 2 – The Chartnav 343

2. USING YOUR CHARTNAV 343

2.1 The Chart Cards

The Chartnav 343 uses the small C-MAPCF95 chart cards. Each card contains many charts of the area it covers but you need to ensure that your cards give you suitable coverage at a suitable scale for your journey.

You can put your chart cards in to either slot in any order.

2.2 Powering up

Press and release the **POWER** key to turn the Chartnav 343 on. Pressing and holding the **POWER** key turns the unit off so be careful not to hold the key in. The unit will power up and carry out a self-test routine. As the unit runs through this test, which will take about 15 seconds, you will see the test results;

System Unit Test	The V*. ** is the test software version fitted to your unit.
KERNAL 8000	These identify the operating system as Chartnav 343
SYSTEM WORD	0005 85A1 – A C-Map Reference Number.
EPROM TEST	When the unit completes the Eprom Test it will display PASSED. If the unit finds a fault with the Eprom NOT PASSED will be shown. A Cetrek Distributor should be consulted.
RAM TEST	Having checked the hardware the unit completes the RAM Test by displaying PASSED. Should a serious hardware error be found the unit will display NOT PASSED and a Cetrek Distributor should be consulted.
DATA	This checks that the cards are functioning correctly and displays the identification code of the cards. "NOT PRESENT OR FAULTY" will be displayed if there are no cards or if the card is not in the slot properly. "FAULTY" will be shown if a reading error has been found, this is normally due to a damaged card. Should the card contacts become dirty they are easily cleaned using an ordinary pencil eraser.

CHARTNAV 343

CODE

This checks that the software is operating correctly and displays the software version fitted. Should a reading error be found, "FAULTY", will be shown and the system will reset and repeat the self-test. If "FAULTY" is displayed again, consult a Cetrek Distributor.

Once the tests are complete the Cetrek logo is displayed for a few seconds, this is then replaced with a Caution Page.

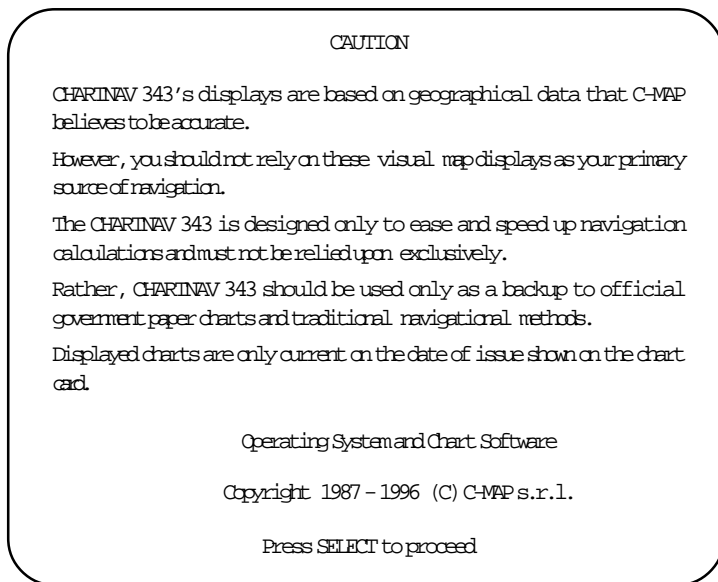


Figure 3 – The Caution Page

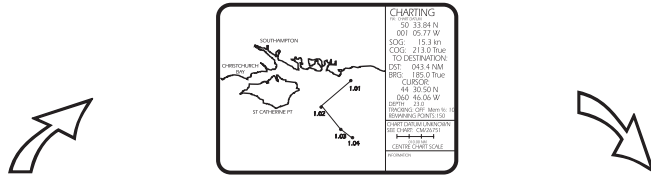
Make sure you read this caution carefully. Once you have finished reading this page, press the **SELECT** key to continue.

After a brief delay the PLOTTER Page will be displayed.

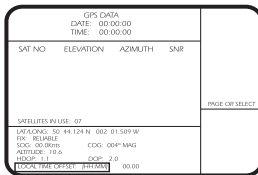
3. THE BASICS

By simply pressing the **PAGE** key you can scroll through four display pages and can quickly access the desired information when planning or undertaking a journey.

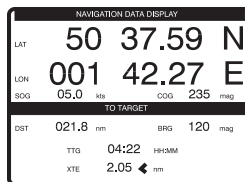
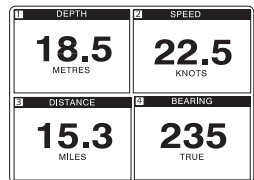
The PLOTTER Page



The GPS STATUS Page



The DISPLAY Page



The NAVIGATION DATA Page

Figure 4 – The Page Cycle

The Plotter page displays the charts and has access to the menu system which enables settings to be adjusted and the Chartnav 343 to be customised to suit you.

The remaining pages are dedicated information pages providing quick, easy access to navigational data. These are explained in detail in chapters 5, 6 & 7.

The Plotter Page

The Plotter page is where you plan your route with the Chartnav 343, it's use of windows and on-screen prompts make this extremely easy.

The charts and information from the cards are shown on the Plotter page. Zoom in and out with the zoom keys, use the trackpad to move the cursor around the chart.

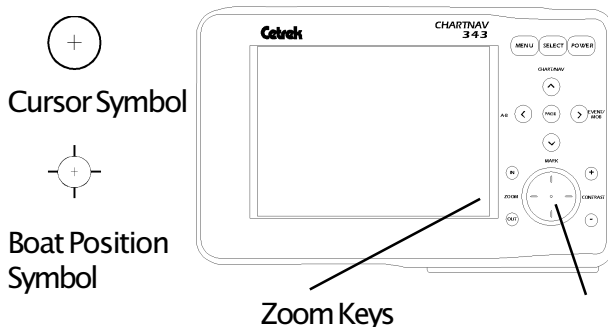


Figure 5 – Zoom and Pan Controls

When the cursor stops over a symbol on the chart, a window “Pops up” with brief details about the item the symbol relates to. This Pop-Up Window also tells you which keys to use to access further information or functions.

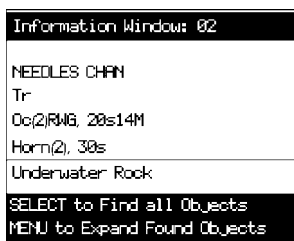


Figure 6 – A Pop-Up Window

The charts are viewed in one of two modes:

Charting Mode is where all distance and bearing information is taken from the cursor position. If the cursor 'bumps' the edge of the screen, the chart pans across. The vessel's position can be off the screen. In Charting Mode CHARTING appears at the top of the Data Display Window.

Navigate Mode is where the vessel's position is kept on the screen. Information is taken from the vessel's position (this mode is only of use if a position-finding instrument is installed). The cursor will not cause the screen to pan, only the vessel's position will. In Navigate Mode NAVIGATE appears at the top of the Data Display Window.

The **CHART/NAV** key switches between these two modes.

The Menu System

From the Plotter page you can access the menu structure by pressing the **MENU** key. Information, options, settings or prompts are displayed around the screen.

The cursor arrows surrounding the **PAGE** key are used to move around the menus in a simple and logical manner, following the prompts to press the correct key.

A map of the full menu structure can be seen at section 4.9.

Marks and Events

The Chartnav 343 can remember up to 500 User points and will display a symbol at that position on any chart.

These are lat/long positions identified by symbols on the screen. There is a choice of symbol, a 16 character identifier, position and date entered. There are two ways of entering one of these, press the **MARK** key and the position of the cursor is stored, press the **EVENT** key and the vessel's position is stored.

A Pop-Up Window is displayed for each point, this can be edited by following the prompts in the window.

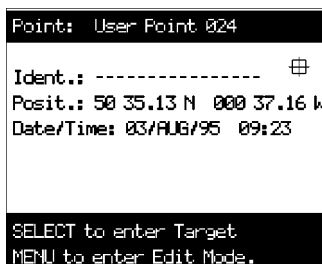


Figure 7 – A User Point Pop-Up Window

Routes

A Route is a series of turning points, called Waypoints, connected by straight lines. The Chartnav 343 can store up to 6 routes. From the Plotter page, press the **MENU** key. Plotter is highlighted (black), so press **SELECT** and the menu changes, Routes is highlighted so press **SELECT** again and you are at the screen to enter, view or edit your routes. Just follow the prompts.

Navigating a Route

Providing your system has a position finding device and suitable autopilot, the Chartnav 343 will feed data to the autopilot so that the boat will automatically follow a route. This is done by creating a 'Target' that it steers towards. When the boat nearly reaches the target the Chartnav 343 will move the target to the next waypoint in the route and so turn the boat.

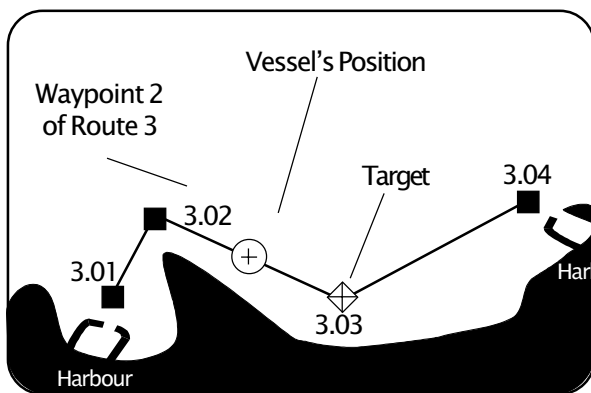


Figure 8 – An Example Route

To create a target: position the cursor over a User Point or Waypoint, the Pop-Up Window shows. An option at the bottom of the window will be "SELECT to enter target", press the **SELECT** key and the Chartnav 343 will immediately start transmitting suitable data to the autopilot. Switch your autopilot to navigate mode and you'll be on your way.



3.1 A Tutorial to Navigate to a Single Waypoint

Here we assume that the Chartnav 343 is connected to both a position finding device such as a GPS, and suitable autopilot.

1. Press the **POWER** key to turn the unit on. The screen will show the test information, then the Cetrek globe logo, then stop at the Caution screen.
2. Press the **SELECT** key to clear the Caution screen. The Plotter Page will be displayed.
3. Check that the indicated vessel's position is correct. If you cannot see the vessel's position on the screen, press the **CHART/NAV** key. This sets the Chartnav 343 to navigator mode and moves the chart to place the vessel's position in the centre of the screen. Press the **CHART/NAV** key again to return to charting mode.
4. Zoom in or out to a comfortable level and move the cursor to a position away from the vessel where you can safely travel to in a straight line.
5. Press the **MARK** key. At the cursor position, a mark symbol is shown. A Pop-up window is displayed. At the top of the window the unique User Point number is shown. You can press the **MENU** key and edit the window by putting an identifier name in, change the symbol and edit the lat/long. This is done by using the arrow keys that are around the PAGE key and the **SELECT** key. Press the **MENU** key to exit the window editing mode.
6. Press the **SELECT** key to make the mark the Target. The symbol will change to a diamond with a cross through it and a straight line will be drawn between the vessel's position and the target. Check that this is a safe track to follow.
7. Turn your autopilot to Navigator mode and let the Chartnav 343 take you there !! When you arrive, the waypoint arrival alarm will tell you, cancel the alarm and position the cursor over the Target. When the Pop-up window shows, press the **SELECT** key to delete the target.
8. Turn your autopilot back to manual control.

3.2 A Tutorial to Enter a Route

Here we assume that the Chartnav 343 is connected to both a position finding device such as a GPS, and suitable autopilot.



1. Press the **POWER** key to turn the unit on. The screen will show the test information, then the Cetrek globe logo, then stop at the Caution screen.
2. Press the **SELECT** key to clear the Caution screen. The PLOTTER Page will be displayed.
3. Check that the indicated vessel's position is correct. If you cannot see the vessel's position on the screen, press the **CHART/NAV** key. This sets the Chartnav 343 to navigator mode and moves the chart to place the vessel's position in the centre of the screen. Press the **CHART/NAV** key again to return to charting mode.
4. Zoom in or out to a comfortable level and move the cursor to a position away from the vessel to the East.
5. Check that there is no Pop-up window showing, move the cursor off any symbol if there is. Press the **MENU** key and the selection bar appears across the top of the screen.
6. "PLOTTER" is already highlighted, so press the **SELECT** key to activate it. The selection bar will change.
7. "ROUTES" is already highlighted so press the **SELECT** key to activate it. The selection bar changes to give 6 route options,
8. Use the  and  keys to highlight a route that is clear. The bottom right window of the screen is a side menu and "START NEW ROUTE" is automatically highlighted.
9. Check that the cursor is in the correct position and press the **SELECT** key. This will place a waypoint symbol at the cursor position and a Pop-up window will show. You can press the **MENU** key and edit the window by putting an identifier name in, change the symbol and edit the lat/long. This is done by using the arrow keys that are around the **PAGE** key and the **SELECT** key. Press the **MENU** key to exit the window editing mode.

10. The side menu option will automatically change to “ADD TO ROUTE” so reposition the cursor somewhere north of the first waypoint and press the **SELECT** key. Again the Pop-up window will show, edit this if you wish.
11. Move the cursor to a third position, say East of the second, and press the **SELECT** key (“ADD TO ROUTE” is still highlighted) to position the third waypoint.
12. Move the cursor to a forth position, say South of the third position, and press the **SELECT** key to place the forth waypoint of the route. Edit the Pop-up window if you wish.
13. Press the **PAGE** key now to finish the route and return to the PLOTTER Page. That route is now stored and ready for recall when you want it.

3.3 A Tutorial to Recall and Navigate a Route

Here we assume that the Chartnav 343 is connected to both a position finding device such as a GPS, and a suitable autopilot.

1. Press the **POWER** key to turn the unit on. The screen will show the test information, then the Cetrek globe logo, then stop at the Caution screen.
2. Press the **SELECT** key to clear the Caution screen. The PLOTTER Page will be displayed.
3. Check that the indicated vessel’s position is correct. If you cannot see the vessel’s position on the screen, press the **CHART/NAV** key. This sets the Chartnav 343 to navigator mode and moves the chart to place the vessel’s position in the centre of the screen. Press the **CHART/NAV** key again to return to charting mode.
4. Check that there is not a Pop-Up Window showing (if there is, move the cursor off any symbol). Press the **MENU** key and the selection bar appears across the top of the screen.
5. “PLOTTER” is already highlighted, so press the **SELECT** key to activate it. The selection bar will change.

6. "ROUTES" is already highlighted so press the **SELECT** key to activate it. The selection bar changes to give 6 route options,
8. Use the  and  keys to highlight the route that you wish to recall. When the correct one is selected, press the **PAGE** key to return to the PLOTTER page.
9. Move the cursor over any waypoint in the route that you wish to steer to. When the Pop-up window appears press the **SELECT** key to make the waypoint the Target. The symbol will change to a diamond with a cross through it and a straight line will be drawn between the vessel's position and the target. Check that this is a safe track to follow.
10. The Pop-Up Window will tell you which way it will follow the route, backwards or forwards, which you can change if you choose to join a route at a waypoint other than an end one.
11. Turn your autopilot to Navigator Mode and let the Chartnav 343 take over. When you reach the end of the route, position the cursor over the Target. When the Pop-up window shows, press the **SELECT** key to delete the target.
12. Turn your autopilot back to manual control.

4. THE PLOTTER PAGE

Following power up of the Chartnav 343 and the successful completion of the self-test routine, the unit will display the PLOTTER Page. The chart displayed will be determined by the card available to the Chartnav. The internal software has a World map always available. For clarity the information displayed on the Chartnav 343 Mono screen is in a light dot pattern and in the Chartnav 343 Colour with different colours.

From this page the charts on the cards Marks, Events and Waypoints (User Points) are placed and edited and Routes are entered. It is from this page that Target Waypoints are created so Routes may be navigated and personal chart information and waypoint libraries are built up.

When the Chartnav is reading information from the card, for example to redraw, the word "Loading" is displayed.

Whenever you leave the PLOTTER Page the Chartnav remembers the settings so that when you return to the page it will open at the same place and scale as it was left.

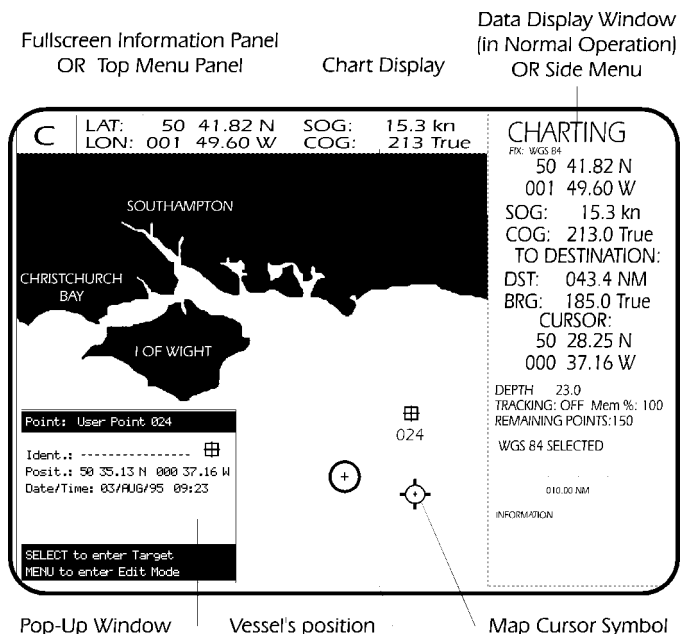


Figure 9 – The PLOTTER Page

In Normal Operation the display screen is divided into two main parts – a larger left and smaller right window. The right window being further divided into a top and bottom section.

The left window is the Chart Display. On this part of the screen, the charts that are read from the internal charts or the Chart Card are displayed, then Routes and other overlaid information are plotted.

When the edge of the Chart Display Window corresponds with the edge of the digitised chart, the Chartnav searches the data card for a new chart which contains the same cursor position at a scale similar to that of the current chart. If one is available it automatically changes to it. If there is not one available, the display will not go beyond that point, so ensure that you have adequate cards for your journey.

The right window is a Data Display Window, which is divided into a top half for navigation or charting information, and a lower half for general information.

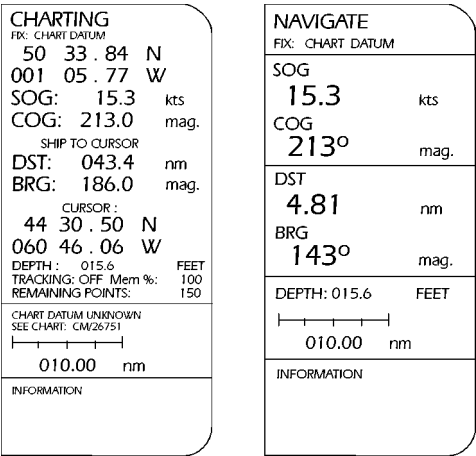


Figure 10 – The Data Display Window

The information will always appear in the same location in the window. Once you have become familiar with the NAVIGATE and CHARTING layouts, you should be able to find the information that you need very quickly.

These windows give status and detailed information relating to the electronic charts and the Chartnav's various functions.

An explanation of the information displayed is given below:

CHARTING

This is the status, "CHARTING" or "C" is displayed when you are planning your route. "NAVIGATE" or "N" is displayed when navigating a planned route.

FIX *

This tells you the status of the "FIX" (your position) from the positioning device. The message tells you if the Local Correction facility is switched ON, using the CHART DATUM or WGS84. "NOT GOOD", "NOT RECEIVED" or "WRONG FORMAT" will be displayed if a suitable fix signal is not received.



50 41.00 N
001 56.00 W

"Wrong Format" may be displayed until your GPS obtains an accurate fix.

This is the vessel's current position, calculated from the FIX. If a Fix has never been received, a set of dashes will be displayed instead of the vessel's co-ordinates and the Fix status will display "NOT RECEIVED".

SOG: 10.2 kts*

"SOG" Speed Over Ground may be displayed.

COG: 168.0 mag*

"COG" Course Over Ground may be displayed, 168 degrees magnetic in this example.

* If the positioning instrument is not connected or its message is badly received, a dash appears in place of the last number in the FIX, SOG, SPEED, COG or HEADING data fields. They will all appear as dashes on power up if a position finding device has never been fitted.

SHIP TO

This indicates that the distance and bearing information below is from the vessel's position to the Target or, if there is no Target, to the cursor.

DST: 13.5 nm

"DST" is the distance from the ship's-position to the cursor or target, as stated above.

BRG: 052.0 mag

"BRG" is the bearing from the ship's-position to the cursor or target, as stated above.

CHARTNAV/343

- CURSOR :

50 40.65 N

001 55.02 W
- DEPTH

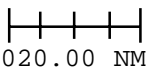
"DEPTH" is the depth information received from a Depth unit, if fitted to your system.
- TRACKING: ON

"TRACKING" tells you if the tracking is set ON or OFF and can be set to time or distance intervals .
- Mem % : 100

This shows the percentage of Memory remaining for tracking.
- REMAINING POINTS

This displays the number of user points available. There is a total of 500 user points which can be made up of MARKS, EVENTS and Waypoints. A maximum of 99 user points are available in any one route.
- CHART DATUM

This tells you from which standard the chart was digitised. The following may appear in this area:



- INFORMATION

This is where general purpose information is displayed.
- When the **PAGE** key is pressed and held for 3 seconds the PLOTTER Page gives a Fullscreen Chart Display.
- The Data Display Window is no longer shown, instead a limited information panel is displayed at the top of the screen.
- The Chart Datum and Scale are displayed in the bottom right of the Plotter Page. When required the information section is also displayed, for example to display A to B Information.

C	LAT: 50 33.84 N LON: 001 05.77 W	SOG: 15.3 kn COG: 213 True	DST: 043.4 Nm BRG: 185.0 True
N	LAT: 50 33.84 N LON: 001 05.77 W	SOG: 15.3 kn COG: 213 True	DST: 043.4 Nm BRG: 185.0 True

Figure 11 – Fullscreen Information Panel

You can set the Chartnav so that it always starts with the Fullscreen Display, see section 14.5 Plotter Screen.

4.1 PLOTTER Page Symbols

The following table shows the various symbols used on the PLOTTER Page and gives a brief explanation of their use and meaning.


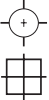


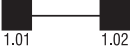


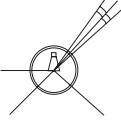

	Your vessel's position on the Chart as received from a position finding device. The symbol flashes when a fix is being received.
	Map cursor symbol – which is controlled by the Trackerpad. Default Mark symbol placed at the cursor position – it can be changed using the Pop-Up Windows edit facility, see section 11.2. Each Mark will have a unique user point identification number.
	Default Event symbol placed at the ship's position– it can be changed using the Pop-Up Window's edit feature. Each Event has its own unique user point number for identification.
	Target symbol – the chosen Waypoint you wish to navigate to.
	Default Waypoint symbols – used to create a Route. Each Waypoint has a number indicating which Route the Waypoint is in and the Waypoint's position within that Route.
	Multiple User Point symbol – used when two or more different user points share a position. All identification numbers are displayed.
	Man Overboard symbol – which is placed at the vessel's position.
	The Cartographic Object symbols change depending on the Complex Icon setting, see Chart Features in section 14.4.
	<ul style="list-style-type: none"> Single Complex Icons – drawn as shown on a Traditional Paper Chart. Multiple Complex Icons – a simple icon is used and can represent more than one Cartographic Object items.

Figure 12
Screen Symbols



4.2 The Pop-Up Window

When the PLOTTER Page menu is active, the Pop-Up Window will only appear whilst in the Routes Menu.

Mark, Event or Waypoint Pop-Up Window

When the map cursor is placed over a Mark, Event or Waypoint a window will appear with information relating to that particular User Point. Further details on editing this information is in section 11.2.

Using the Trackerpad, move the map cursor away from the highlighted symbol so that the Pop-Up Window is no longer displayed or use the **PAGE** key to close down the window. Note that if the window has been edited you will need to use the **MENU** key to close the window.



Information Pop-Up Window

Similarly, a Pop-Up Window (displaying international abbreviations) will appear if the map cursor is placed over a Cartographic Object.

To view this information in full:

- Press the **MENU** key for details on the cartographic object(s).
- Press the **SELECT** key for details on the cartographic object(s), plus Depth Contours, Land or Depth Area and Source Data.

The Information Page displays a tree structure of the Cartographic Objects and their composite components.

Use the  and  keys choose the desired option, then press the **SELECT** key to view the information, use the **PAGE** key to return to the tree structure.

Press the **PAGE** key to exit the Information Page.

If **SELECT** is pressed without a Pop-Up Window in view, the Information Page will be displayed giving Depth Contours, Land or Depth Area and Source Data.

Alarm Pop-Up Window

A similar window is also used to display alarm information, if an alarm is triggered.

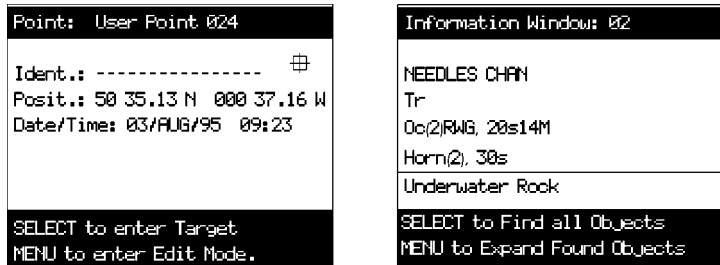


Figure 13 – Pop-Up Windows

4.3 Distance and Bearing Between Two Points

In Charting Mode, place the cursor and press the **A-B** key to get a start position, move the cursor and press the **A-B** key again. A line is drawn between the points and the distance and bearing from A to B is displayed in the Information Box.

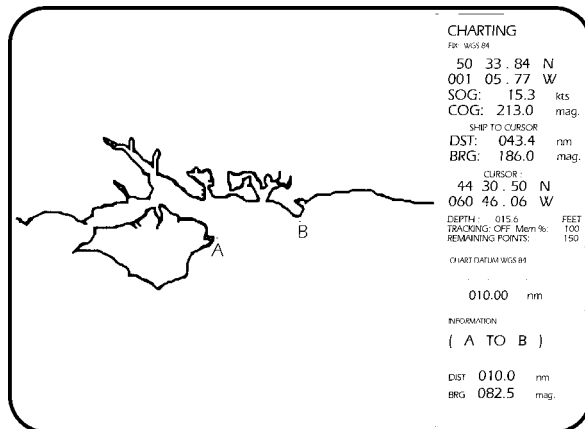


Figure 14 – Distance and Bearing Between Two Points

In Navigate Mode, one press of the **A-B** key will automatically give the distance and bearing from the ship's position to the cursor. The A-B symbol can be cleared, at any time by:

- Pressing and holding the A-B key until it beeps, or
- Using the Clear Data option in the Plotter Menu, see section 11.3.

4.4 Track Plot Mode

When the Track Plot Mode is switched on there are additional Zoom Levels, this is useful for areas where there is no data.

If a larger-scale chart is not available when Zooming IN, the Chartnav will automatically turn the Track Plot Mode on and Cartography off. The Zoom In function will still operate down to 0.005 nm per scale length.

4.5 Chart Boundaries

The charts available on the C-MAP CF95 chart cards are displayed with indents which point into the chart area.

When Chart Boundaries is set to Auto:

- If viewing the World map the first charts contained in the chart cards are displayed.
- If you are in a chart, contained in the chart cards, the next four chart levels are displayed.

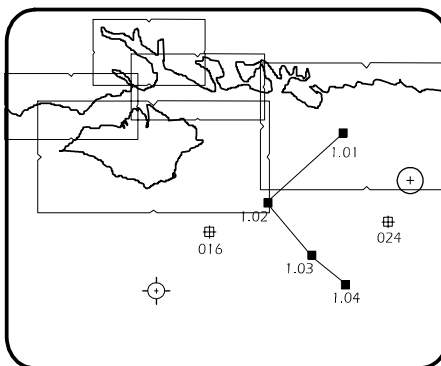


Figure 15 – Chart Boundaries

4.6 Change Colour - Chartnav 343 Colour only

The colour of the symbols for Marks, Events, Routes, Tracks and the Target can be changed.

4.7 Course Up/Resolution - Chartnav 343 Colour only

The Chartnav 343 Mono always displays North to the top of the screen. The Chartnav 343 Colour can be set to display the direction of travel to the top of the screen.

As you turn onto a new waypoint the Resolution setting will determine when the map presentation will turn to continue displaying the direction of travel as Course Up.

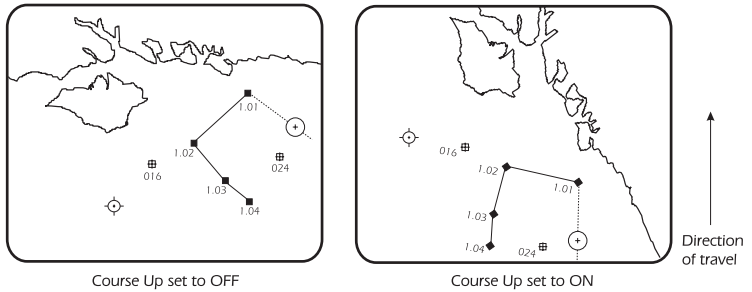


Figure 16 – Course Up

4.8 The PLOTTER Page Menu System

When the **MENU** key is pressed, from either a Fullscreen Display or Normal Operation, the top of the screen will display the menu option boxes and the Data Display Window becomes a Side Menu showing menu information and options. The menu structure in next section shows the various menu paths available from the PLOTTER Page.

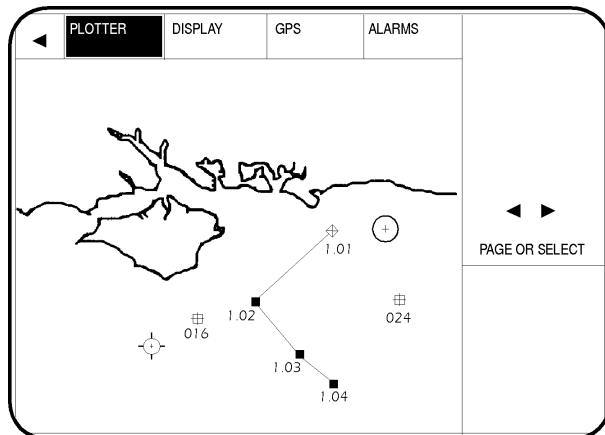


Figure 17 – The Menu Display

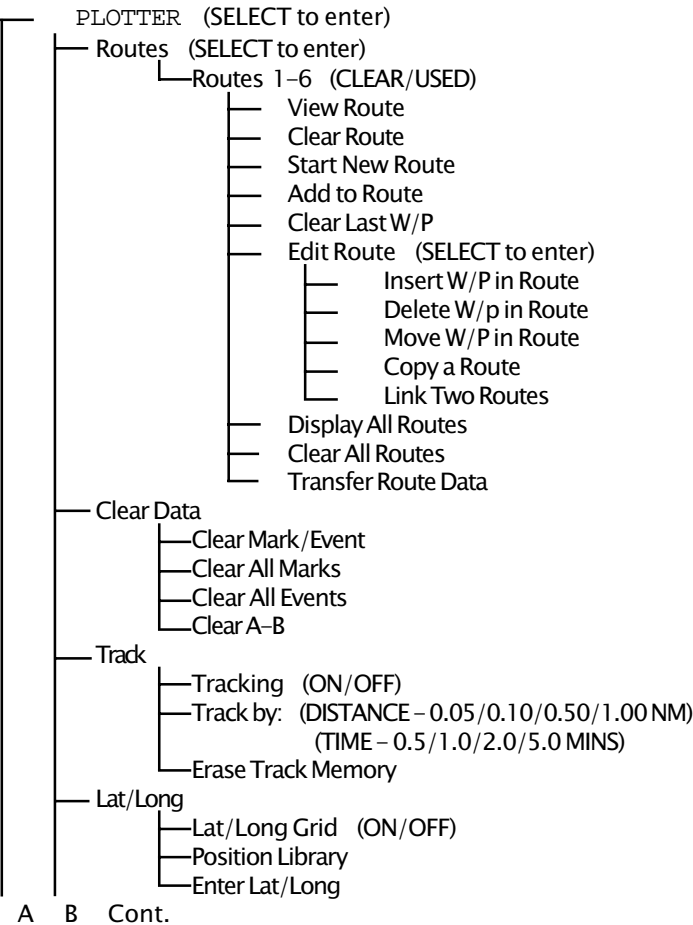
Whilst the menu system is open the map cursor may be moved around the Chart Display as usual but the Pop-Up Windows will only operate within the Routes Menu.

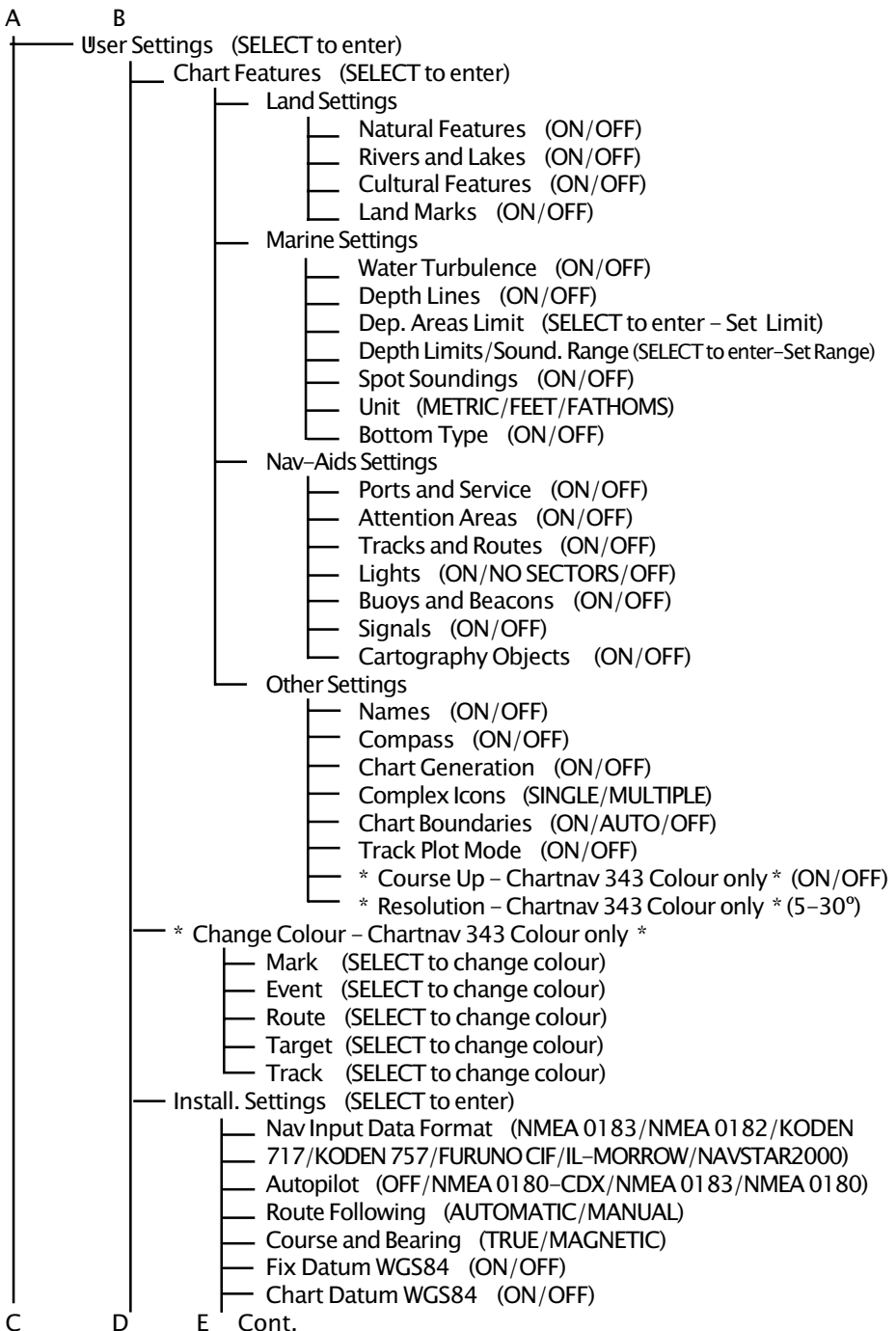
It may be necessary press the **SELECT** key to enter some of the sub-menus. The four arrow keys, located around the **PAGE** key on the unit, are used to select menu options.

As you move through the menus using these keys the active option is shown in black. At all stages prompts in the right hand panel indicate which keys are active and their functions.

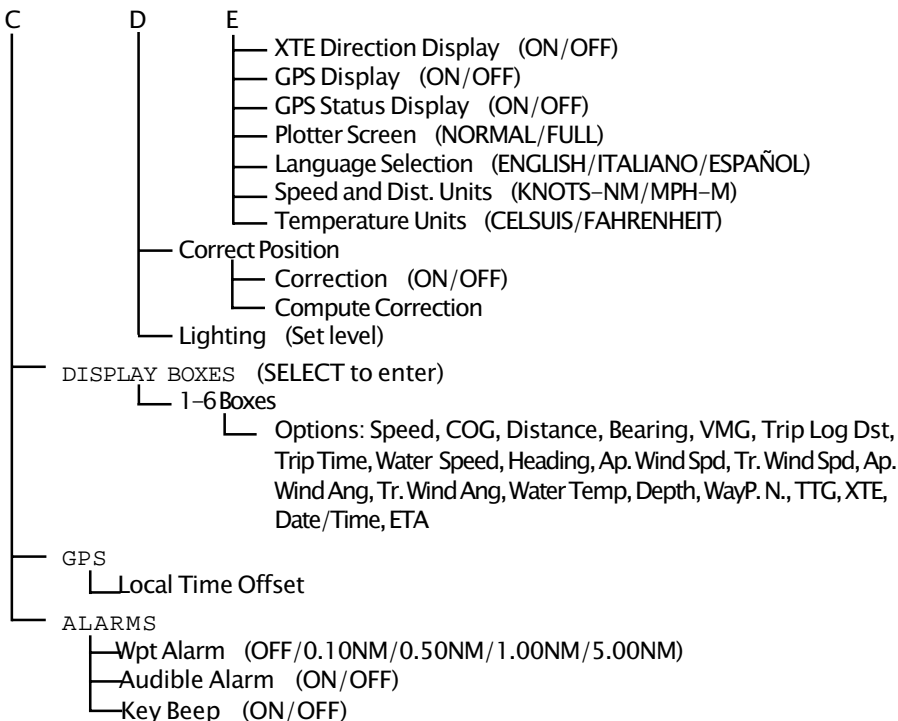
To clear the menu, press the **PAGE** key or select the ◀ symbol and press the ⬅ key to go back one step.

4.9 The Menu Structure





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5. THE DISPLAY PAGE

From the PLOTTER Page pressing the **PAGE** key will replace the Chart Display with a multi-instrument DISPLAY Page. This data display is one of the most powerful and flexible features available on any of today's plotter systems and can be customised in many ways.

A series of boxes displays 1, 2, 4 or 6 items of information, generated either by the Chartnav 343 itself or from instruments connected to it. The more instruments connected to the system the greater the range of data available.

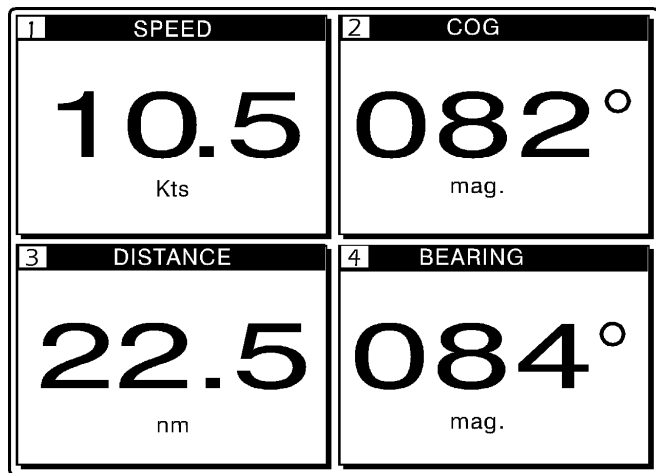



Figure 18 – The DISPLAY Page

5.1 The DISPLAY Menu

The DISPLAY Page does not give access to the menu system, to customise the layout of this page you must return to the PLOTTER Page using the **PAGE** key. From the PLOTTER Page:

Press the **MENU** key to access the menu system. Use the  key to highlight the DISPLAY option. Press the **SELECT** key to access the DISPLAY Page Set-Up Menu.

The DISPLAY Page Set-Up Menu screen will display the current layout of the page and the various data options available for display.

Use the ⬅ and ➡ keys to select the number of information boxes you want displayed.

◀		1 BOX	2 BOXES	4 BOXES	6 BOXES	
1		DEPTH		2		SPEED
		18.5 METRES				22.5 KNOTS
3		DISTANCE		4		BEARING
		15.3 MILES				235 TRUE
SPEED TRIP TIME TR. WIND ANG DATE/TIME		COG WATERSPEED WATER TEMP. ETA		DISTANCE HEADING DEPTH		BEARING AP. WIND SPD WAYP. N.
				VMG TR. WIND SPD TTG		TRIP LOG DST AP. WIND ANG XTE
						▲ ▼ PAGE OR SELECT
						BOX 1 VALUE BOX 2 VALUE BOX 3 VALUE BOX 4 VALUE RESTORE DEFAULTS

Figure 19– The DISPLAY Page Set–Up Menu

Having made your choice use the ⬆ and ⬇ keys to select a box, then use the **SELECT** key to cycle through the options along the bottom of the page, stopping at the one you want displayed in that box.

The Chartnav 343 leaves the factory with practical default selections for each of the 1, 2, 4 and 6 box choices already setup. Therefore adjustments to the display boxes are not essential but a matter of preference. If the data options have been altered but you wish to return to the default settings simply highlight the “Restore Defaults” option below the box values and press the **SELECT** key.

Once you are happy with the data display exit the menu system and return to the PLOTTER Page by pressing the **PAGE** key.

6. THE NAVIGATION DATA PAGE

From the DISPLAY Page pressing the **PAGE** key will replace the multi-instrument display with a NAVIGATION DATA Page. If starting from the PLOTTER Page press the **PAGE** key twice.

The NAVIGATION DATA Page is designed to show position data in a clear and concise manner. The page is purely for information and gives no access to the menu system. Only the **PAGE** key will operate from here, taking you to the next page in the cycle.

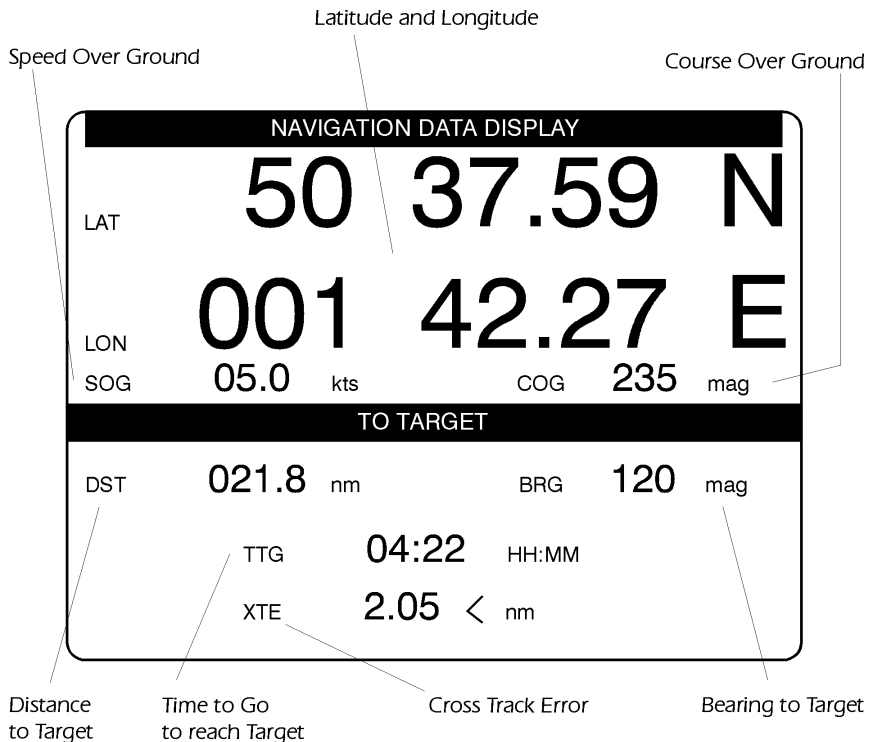


Figure 20 – The NAVIGATION DATA Page

The NAVIGATION DATA Page can be turned ON or OFF to add it to or remove it from the page cycle, details of how to do this are given in section 1 5.5 GPS Display.

7. THE GPS STATUS PAGE

From the NAVIGATION DATA Page pressing the **PAGE** key will replace the NAVIGATION DATA Page with another, more detailed, information display.

Date ddmmyy : 03 08 95 Time hhmm:ss : 11 31:10			
SAT NO.	ELEVATION	AZIMUTH	SNR
04	14°	034 °	16
05	43°	081 °	Not Tracked
06	55°	189 °	Not Tracked
09	11°	136 °	Not Tracked
20	83°	029 °	Not Tracked
24	28°	066 °	21
25	33°	302 °	27
Satellites In Use: 03			
PAGE			
LAT-LON: 50 22.00 N 001 22.00 W FIX RELIABLE SOG: 00.0 kts COG: 095 mag. Altitude: 88.2 HDOP: 3.2 VDOP: 2.0			

Figure 21 – The GPS STATUS Page

As with the NAVIGATION DATA Page, the GPS STATUS Page may also be removed from, or added to, the page cycle as required, details of how to do this are given in section 15.5 GPS Status Display.

The page shows the detailed information received from any GPS connected to your Chartnav 343. The amount of data that is displayed depends upon the particular make of GPS that is connected. For example if a Decca is part of your system only the basic Date, Time, Lat, Long, SOG and COG data will be shown. The diagram above shows the maximum data that may be seen.


Date	This is the Day, Month and Year information as received from the satellite.
Time	The time received from the satellite is in UTC (Universal Time Co-ordinate) for navigational purposes this can be taken as being GMT.



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Sat No	Each satellite has its own unique number for identification.
Elevation	This is the angle from the horizon (0°) to the Satellite (up to 90°).
Azimuth	This is the true bearing of the satellite.
SNR	Signal to Noise Ratio, a figure less than 25 will give bad interference.
Satellites in Use	This is the number of satellites that you are receiving information from.
Lat/Long	This is the vessel's current position co-ordinates calculated by your GPS.
Fix	This gives an indication of the reliability of the fix. Three satellites must be in use before a position can be considered reliable. With more satellites in use a more accurate position is possible.
SOG	The vessel's Speed Over Ground.
COG	The vessel's Course Over Ground.
Altitude	This is the altitude of the vessel/antenna above mean sea level.
HDOP	Horizontal Dilution of Precision should be less than 6 for accurate data.
VDOP	Vertical Dilution of Precision should be less than 6 for accurate data.


7.1 The GPS Menu



The GPS STATUS Page does not give access to the menu system, to allow a local time offset to be entered you must return to the PLOTTER Page using the **PAGE** key.

From the PLOTTER Page, Press the **MENU** key to access the menu system. Use the  key to highlight the GPS option. The local time offset controls will be displayed in the Side Menu. The time received from a satellite is UTC/GMT.

A time offset may be entered in 30 minute steps to give up to plus or minus 13 hours of offset. Use the  and  keys to adjust the offset until the required offset value is displayed.

8. ALARMS

There are three alarm features that may be selected and controlled by the user. From the main PLOTTER Page, press the **MENU** key to display the menu across the top of the page. Use the  key to select the Alarms option at the right hand end of the menu. Press the **SELECT** key to show the alarm list in the lower right corner of the display.

Use the  and  keys to choose the alarm you wish to change (the option with the black background).

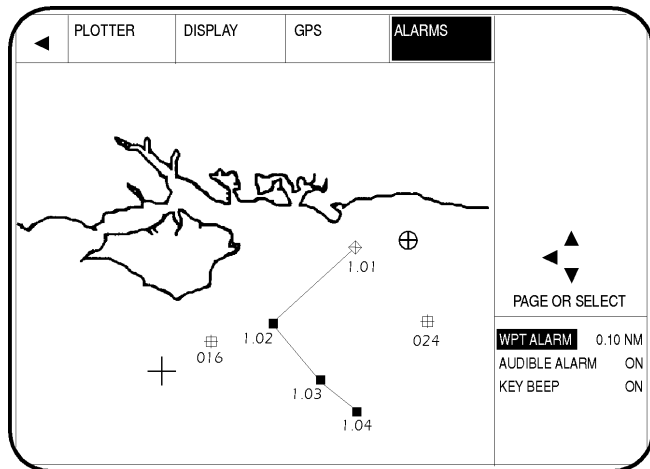


Figure 22 – The Alarm Menu

Once you have made your selection, exit the Alarms Menu by pressing the **PAGE** key.

For each alarm condition, prompts at the base of the Alarm Pop-Up Window, will indicate which key should be used to clear or ignore the Alarm.



Figure 23 – The Waypoint Arrival Pop-Up Window

8.1 Waypoint Arrival Alarm

The waypoint Arrival Alarm is an audible and visual warning that your vessel is within a specified radius of the Target Waypoint.

To set or adjust the Waypoint Arrival Alarm, highlight the WPT ALARM option on the Side Menu and press the **SELECT** key to choose from the following settings: OFF, 0.10 NM, 0.50 NM, 1.00 NM or 5.00 NM

To clear the Waypoint Arrival Alarm, press the **SELECT** key.

This alarm will not affect the point at which the Chartnav will turn on to a new Target.

8.2 Audible Alarm

When an alarm is initiated the Chartnav will display an alarm message in a Pop-Up Window and an audible alarm will sound.

The audible alarm feature may be switched off. Highlight AUDIBLE ALARM on the Side Menu and use the **SELECT** key to choose between ON and OFF.

8.3 Key Beep

Each time a key is pressed, the unit emits a beep sound to confirm that the key press has been registered.

The KEY BEEP setting on the Alarms Menu turns the audible response from a key press ON or OFF. Again use the **SELECT** key to switch between the two settings.

8.4 Reported Alarms

The Chartnav will also use the Pop-Up Window and audible alarm features to display the following alarms:

Fix : Not Good

Fix : Not Received

Wrong Format

Autopilot Arrival Range

Chart Scale Changed

(If scale changes automatically the Chartnav will emit a single beep but no alarm message will be shown.)

9. UNDERSTANDING THE EQUIPMENT

9.1 The Chartnav Control Unit

The Chartnav Control Unit contains the Chart Card Reader, Trackerpad and Function keys. The page and menu controls are clustered together for quick and easy operation. The Keyboard has an audible “beep” feature, so you can easily tell when the key press has been accepted, and the unit is backlit for easy operation at night.



Figure 24 – The Chartnav 343

9.2 The Chart Cards

The Chartnav operates with C-MAP electronic cards and its own internal Cetrek operating software. You must have the correct C-MAP CF95 cards for your region, just as you would paper charts.

The internal card reader has 2 slots, it does not need a card in each slot in order to operate. Equally it is not important which slot the card is in.

The internal software of the Chartnav has a basic World map always available but greater detail cards are needed.

The C-MAP CF95 cards used with your Chartnav contain a number of charts and subcharts. One geographical area may be covered in a variety of scales. This is comparable to having a series of paper charts for a particular area, each at a different scale. Coastlines, landmark names, lighthouses, depth lines, restrictions and other data normally found on traditional paper charts are all stored in the cards.

However, you must remember that the electronic charts are only as good as the paper charts they were created from. Although created from a number of sources, the charts do not contain greater detail or zoom in larger than a 1:1 ratio.

The gold card contacts should be kept clean, free from any debris or dirt that may collect there. If the contacts should become dirty, you can easily clean them using an ordinary pencil eraser. The cards are water resistant, but not waterproof; keep them protected from water and spray.

The cards may be changed at any time except when the Chartnav is redrawing the PLOTTER Page.

To insert the card, push the card in the slot until you feel some resistance then push the card down, until the card locks into place.

To remove the card, gently push the card in the slot a small way until you feel some resistance then push the card up. The card will release.

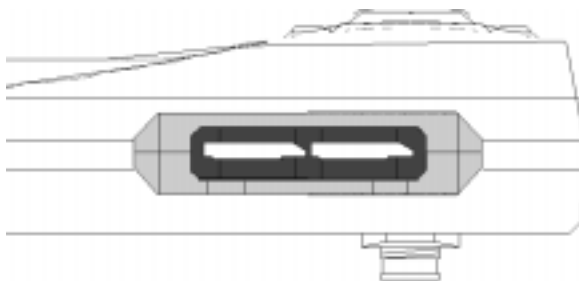


Figure 25– The Chart Card Slots

9.3 The Trackerpad

The Trackerpad makes it easy for you to move the map cursor about the PLOTTER Page quickly and accurately. Press the side of the Trackerpad in the direction you wish the cursor to move: for example, if you wish to move the cursor to the left, press the left edge of the Trackerpad. If the pad is pressed and held the cursor movement will speed up.

When you are in the Charting Mode, moving the Trackerpad until the map cursor “bumps” the edge of the screen will cause the Chart Display to pan or scroll to the next view.

When the Chartnav is processing “Loading” will appear on the PLOTTER Page and Keypad may not operate for a few seconds.

9.4 The Function Keys

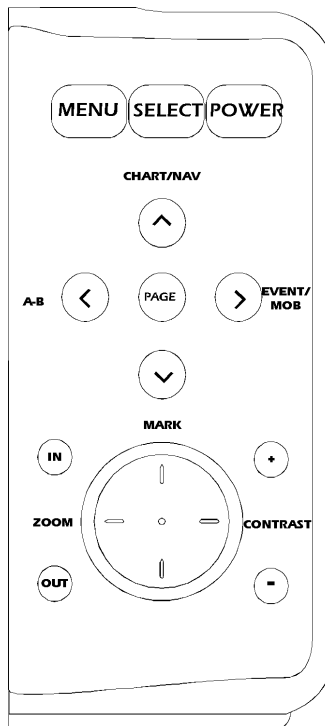






Figure 26 – The Function Keys



The **MENU** Key

The **MENU** key is used to access the menu system. The menus can be entered from either Charting or Navigate Mode and whether on a Fullscreen Display or in Normal Operation. However some features in the menu will not be accessible whilst in Navigate Mode for safety reasons.

The menus appear as a bar across the top of the PLOTTER Page. The Data Display Window will show arrow and key title prompts to guide you through permissible key presses.

To select from a horizontal list of menu items, use the  and  keys. To select from a vertical list use the  and  keys.

Pressing the **SELECT** key will change settings or access further menus. Pressing the **PAGE** key from anywhere in the menu system will return you directly to the chart display.

Alternatively highlighting the  option in the top menu panel and pressing the  key will take you back to the previous menu level.

The **SELECT** Key

The **SELECT** key is used to select menu options from the top menu panel in order to access further sub-menus or to change the status of the chosen option or setting.

It is used to select the Target Waypoint when following a single or multi Waypoint Route.

Pressing this key with no other function selected or with a Cartographic Object Pop-Up Window open, an information page is displayed.

In Menu operation the **SELECT** key is used to change settings or access further menus.


The **POWER** Key

The **POWER** key switches the Chartnav 343 on. The off function has a time delay, hold the **POWER** key down for 3 seconds to switch off.

The **CHART/NAV** and Key


The **CHART/NAV** key switches back and forth between the Charting and Navigate modes.

The current mode is displayed prominently at the top of the Data Display Window in Normal Operation or is indicated by a large **C** or **N** on the left of the Fullscreen Information Panel.

In Menu operation the  key is used to scroll up any option lists and turns up the screen and keypad lighting.


The **EVENT/MOB** Key

Pressing the **EVENT** /**MOB** (Man Over Board) key, in either Charting or Navigate Mode, Fullscreen Display or Normal Operation, will place an Event symbol at the vessel's position on the chart. This is explained in detail in section 11.

Within the Menus, the  key is used to scroll along the menu options to the right.

The **MARK** and key



Pressing the **MARK** key, in either Charting or Navigate Mode, Fullscreen Display or Normal Operation, places a numbered Mark on the chart at the current map cursor position.

In menu operation the  key moves down the options or turns the screen and keyboard lighting down.

The **A-B** and Key

The A-B key function can be used to find the distance and bearing between two points on the PLOTTER Page. This is explained in detail in section 4.3.

Press and hold the **A-B** key until a beep is sounded to clear the function.

Within the menu system the  key is used to scroll to the left or to return to the previous menu level, by selecting the box and pressing the  key.

The **PAGE** Key

The **PAGE** key cycles through the 2, 3 or 4 page cycle starting from the PLOTTER Page.

While in the menu system, pressing the **PAGE** key will return you to your Chart Display.

If you press and hold the **PAGE** key for 3 seconds while viewing the chart, the view will change from Normal Operation to a Fullscreen Display, or vice versa.

The **Zoom IN** Key

Pressing the **IN** key will expand the area around the map cursor to the size of the screen. This will show greater detail of a smaller area, by changing the chart scale. The Chartnav takes a few seconds to redraw the chart, but you can press the **IN** key again, or hold it down until the system steps through several scales, without having to wait for the redraw.

If a larger-scale chart is not available on the card for a chosen location, the Chartnav will automatically turn to Track Plot Mode on, with the Cartography automatically switched off. The zoom in function will still operate down to 0.005 nm per scale length.

The **IN** key is still active within the menu system providing the Chart Display is visible.

The **Zoom OUT** Key

Pressing the **OUT** key operates a similar way to the **IN** key, except in reverse, changing the scale and showing a wider, though less detailed view.

Like the **IN** key, the **OUT** key is still active when in the menu system.

Contrast Keys

Use the + and – keys to adjust the Contrast the brightness of the display to a comfortable level.

10. CHARTING AND NAVIGATE MODES

The current mode is shown clearly on the PLOTTER Page by “Charting” / “C” or “Navigate” / “N”.

10.1 Charting Mode

The Charting Mode allows you to examine the charts, position Marks and Events and plot Routes. In Charting Mode all distance and bearing information relates to the map cursor’s position. If the map cursor “bumps” the edge of the screen, the chart will move across and show the next section of the chart, this is called panning or scrolling.

You may zoom **IN** or **OUT** and position the cursor anywhere on the display screen.

In this mode you have full control over all functions contained in the menus. You may measure distances and bearings, enter, edit or delete Marks and Events and select a Target to navigate to.

You do not need to have a position-finding device connected to your Chartnav in order to use this mode of operation but you will not be able to enter a Target unless one is connected.

10.2 Navigate Mode

In order to use Navigate Mode your system must be connected to a working position-finding instrument.

In Navigate Mode all distance and bearing information relates to the vessel’s position. The vessel’s position always remains on the screen and controls which portion of the chart is viewed. The chart pans when the vessel’s position nears the edge of the display.

In Navigate Mode you may use most of the plotting functions in the usual way but some commands are restricted for safety reasons.

11. USING MARKS AND EVENTS

11.1 Placing Marks and Events

Marks, Events and Waypoints are 'User Points'. The Chartnav can store up to 500 User Points.

A Mark is a symbol placed at the map cursors lat/long position when the **MARK** key is pressed. Your vessel's mooring, a favourite spot, the entrance to a harbour – these can all be Marks.

An Event is a symbol placed at the ships position when the **EVENT** key is pressed.

Information can be entered and stored in a Pop-Up Window which can be called up again. The Chartnav will remember the Mark or Event with its information and show them when the relevant area of the chart is viewed.

11.2 Editing a Mark or Event Pop-Up Window

If the Pop-Up Window is not visible, move the map cursor over the Mark or Event that you wish to edit and the window will appear. You can enter or change a 16 character name, change the symbol or amend the lat/long position.





The Pop-Up Windows will not be displayed whilst you are in the menu system, except in the Routes Menu. Remember that whilst the Pop-Up Window is displayed the four directional arrows will only edit the window information.

To edit the information within the Pop-Up Window you must first press the **MENU** key.

Press the ⤴ and ⤵ key to change the first character of the identifier.

Press the ⤶ key to move to the next character.

Once the identifier name is complete, press the **SELECT** key to accept the name.

The symbol at the end of the identifier is now highlighted. You can change this from the default symbol by pressing the  and  key, stopping at the one you want displayed on the chart. Note that the symbol is highlighted so is shown in black at this point.

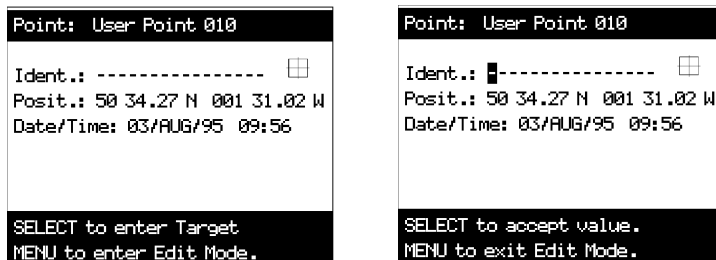






Figure 27 – Editing a Pop-Up Window

Once the required symbol is showing, press the **SELECT** key and the first number of the position is highlighted. You can change the position of the Mark or Event here. Employ the same technique, by using the  and  keys to select the character space, then the  and  keys to change the character, and enter the new position.


When the correct position is entered, press the **SELECT** key and the Chartnav will remember the new position for that Mark or Event.

Once you have finished editing the information in the window use the **MENU** key to exit edit mode. When the key has been pressed the Pop-Up Window will disappear for a few seconds before being displayed again.

To clear the window either move the map cursor away from the Mark symbol using the Trackerpad or press the **PAGE** key.

11.3 Clearing Marks, Events and A-B

Marks and Events can be cleared individually or all together. Ensure that there is not a Pop-Up Window displayed and press the **MENU** key to call up the Top Menu Panel. PLOTTER will already be highlighted so press the **SELECT** key to access the main Plotter Menu.

A second menu panel will appear, press the  key to select the CLEAR DATA box. In the Side Menu the CLEAR MARK/ EVENT option will be highlighted, as shown below.

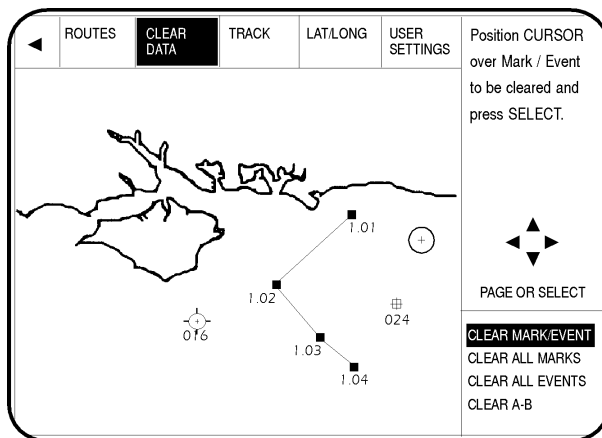




Figure 28 – Clear Data Menu

To remove an individual Mark or Event, position the map cursor over the Mark you wish to delete and press the **SELECT** key. The Mark or Event will vanish.

You may then reposition the map cursor and press the **SELECT** key for any other Mark or Event you wish to delete.

To erase all Marks use the  key to highlight the CLEAR ALL MARKS option and then press the **SELECT** key. The Chartnav will then ask you to confirm this by pressing the **SELECT** key again. Alternatively you may abort the procedure by pressing the  key.

When you have removed the appropriate Marks press the **PAGE** key to return to the PLOTTER Page Display.

11.4 Man Overboard Sequence

If the PLOTTER Page is not displayed, press the **PAGE** key (Blue key) until you can see the charts. If there is a Pop-Up Window, press the **PAGE** key or move the Trackerpad to clear it.

Press and hold the **EVENT** key until a beep is heard, the MOB symbol will be displayed at your vessel's position and a Pop-Up Window will be displayed showing the MOB position, and live Distance and Bearing.

If under Autopilot Control switch your Autopilot off, manually return the vessel to the person who has fallen overboard approaching them slowly (using the bearing in the MOB Window, if necessary).

If under Autopilot Control following a route and have travelled some distance away from the person, it is possible to select the MOB symbol as a target, by pressing the **SELECT** key. This will immediately turn the vessel around and return to the MOB position. An Arrival Alarm Pop-Up Window will be activated. Press the **EVENT** key until a beep is heard to clear the MOB target.

Once the rescue is over, to clear the MOB Window press the **EVENT** key until a beep is heard. The MOB symbol is replaced with a numbered Event (named "Man Overboard").

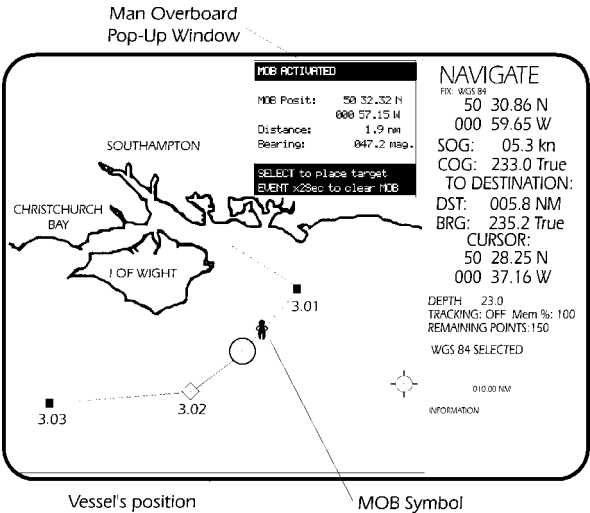


Figure 29 – MOB Pop-Up Window

12. USING ROUTES

A Route is a collection of Waypoints joined by straight lines. The straight lines are tracks that your Chartnav can follow automatically. Up to six routes can be held in the Chartnav's memory which can be recalled and used at any time. The Chartnav can follow a route from any of its Waypoints, to either end, by entering a Target.

If a Waypoint is placed over a Mark or Event, the Chartnav use the Multiple User Point symbol and both identification numbers will be displayed.

Waypoints in a route are numbered so that the first number is always the route number. For example Waypoints in Route 3 will be numbered 3.01, 3.02, 3.03 etc.



A Route may be plotted in either Charting or Navigate Mode. However, Charting Mode allows greater movement around the chart as the map cursor controls the section of the chart that is viewed. In Navigate Mode, although you may zoom in and out, the region of the chart that is displayed is controlled by the position of the vessel.

To make plotting and editing routes at sea easier, the Chartnav 343 has an Autolocate feature, when cursor is positioned near the User Point.

12.1 Routes MENU

To make your route as accurate as possible, there are several edit function available on the Chartnav 343.

From the PLOTTER Page use the **MENU** key to call up the Top Menu Panel. The PLOTTER option will already be highlighted, simply press the **SELECT** key and new menu options will be displayed. ROUTES, the first option, is already selected so press the **SELECT** key again to access the Routes Menu.

The six available Routes will be listed across the top of the screen, ensure that the Route you wish to edit is highlighted. Having selected the appropriate Route the first set of edit options can be found in the Side Menu.

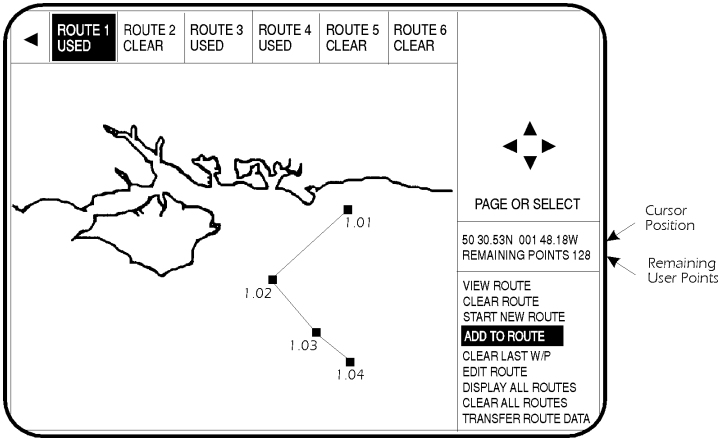


Figure 30 – Routes Menu

12.2 Viewing and Selecting Routes

Press the and key until the VIEW ROUTES option in the Side Menu is highlighted. Use the and key to highlight the route that you wish to view or use then press the **SELECT** key.

The Side Menu also offers a DISPLAY ALL ROUTES option which allows all routes to be viewed but not edited.

12.3 Clear Route

This deletes all Waypoints from the selected Route, allowing it to be used again. It does not delete any Mark or Event information, just their use as Waypoints in the Route.

In the Routes Menu, select the route to be cleared using the and key, then use the and keys to highlight CLEAR ROUTE in the Side Menu. Press the **SELECT** key and the Chartnav will ask you to confirm your command by pressing the **SELECT** key a second time, or give you the opportunity to abort the procedure by pressing the key.

12.4 Starting a New Route

In the Routes Menu select the menu option START NEW ROUTE from the Side Menu.

Move the map cursor to the desired start point on the chart and press the **SELECT** key. This becomes the first Waypoint on your new Route.

The Chartnav automatically highlights ADD TO ROUTE in the Side Menu. To continue the Route position the map cursor at the required Waypoints (turning points) and press the **SELECT** key.

The Chartnav will number each point in ascending order and will draw a line between each Waypoint. Continue adding Waypoints in this manner until you have placed the last Waypoint.

To use an existing Mark or Event as a Waypoint in your Route place the map cursor over the relevant symbol, so that the Pop-Up Window is displayed. You must then press the **PAGE** key to remove the window before you press the **SELECT** key which makes the Mark or Event a Waypoint.

A Multiple User Point symbol will be displayed and will show both Waypoint and Mark/Event identification numbers.

You could now select one of the Waypoints and make it the Target, or you can leave this route until you wish to use it. Details on creating a Target are given in section 13.

Press the **PAGE** key to clear the menus and return to the PLOTTER Page.

12.5 Add to Route

This option allows new Waypoints to be added to the end of an existing Route. Check that the correct Route is being viewed, then highlight ADD TO ROUTE on the Side Menu, position the map cursor in the desired position and press **SELECT**.

12.6 Clear Last W/P

Highlight this function and press the **SELECT** key to delete the last Waypoint on the displayed Route.

12.7 Edit Route Sub-Menu

The EDIT ROUTE option gives access to additional, more advanced, edit features. To access these highlight EDIT ROUTE and press the **SELECT** key, before doing so ensure the appropriate Route is selected.

12.8 Insert W/P

This option is used to insert a new Waypoint between existing Waypoints on a Route. Highlight INSERT W/P on the Side Menu and place the map cursor on the route line where another Waypoint is required. Press the **SELECT** key and the track is now fixed to the map cursor, move the cursor to the new location and press the **SELECT** key a second time to release the track and place the new Waypoint in position. The route will automatically be renumbered.

12.9 Delete W/P

This function allows a Waypoint to be deleted from anywhere along the Route that is being edited or viewed. Highlight the DELETE W/P option on the Side Menu and then place the map cursor over the Waypoint that is to be deleted. Press the **SELECT** key to confirm the deletion. The route will automatically be renumbered.

12.10 Move W/P

This option allows a Waypoint to be repositioned Highlight the MOVE W/P function on the Side Menu and move the map cursor over the Waypoint that is to be moved. Pressing the **SELECT** key will “attach” the Waypoint to the map cursor.

Use the Trackerpad to place the map cursor in the new position and press the **SELECT** key again to confirm the location and “release” the Waypoint.

12.11 Copy a Route

There is the facility for you to make a new Route by copying a Route that has already been entered and then editing it to produce a different Route.

Choose or prepare a clear Route location for your new Route.

Select the Route that you wish to make a copy of. Highlight the EDIT ROUTE option and press the **SELECT** key, then highlight the COPY A ROUTE option on the Side Menu and press **SELECT**. A list is displayed

Choose from the list the new Route location using the  or  keys and press the **SELECT** key to confirm the entry.

The new Route will be an exact copy, only the initial digit of the Waypoint numbers will be changed.

If the location selected is not clear, a warning will appear and you can choose to abort the copy or to replace the old Route with the new copy.

Return to the Routes Menu and select the new Route which you can now edit.


12.12 Link Two Routes

Another way of starting a new Route is to link two existing ones together to form a third Route.

Choose or prepare a clear Route location for your new Route.

In our example we are linking ROUTE 2 to ROUTE 4 into ROUTE 3 (Route 3 will start at 2.01 and finish at 4.01).

Select the first Route in the link. From the Routes Menu highlight EDIT ROUTE on the Side Menu and press **SELECT**.

Use the  key to scroll down the Side Menu to highlight LINK TWO ROUTES and press the **SELECT** key.

Position the map cursor over the end Waypoint on the displayed Route, at the point that you wish it to be joined to another. Press the **SELECT** key. The display will zoom to a level where all used Routes can be seen.

The map cursor has control of a dotted line from the end Waypoint selected.

On the route you wish to link to, position the map cursor over the Waypoint where the link will be made and press **SELECT**. (Use the ZOOM keys to help if required).

You will now be asked which route location you wish to save your linked Route into. The software automatically chooses the first clear Route, (if any are clear) otherwise it defaults to ROUTE 1. You may change the location using the ⬆ and ⬇ keys. Choose the new location and press the **SELECT** key. If the chosen Route is not clear, a warning will be given with the chance to abort.

You can now select the new Route and edit or work with it as you wish.

Pressing the **PAGE** key will return to the Chart Display.

Alternatively highlight the option in the Top Menu Panel and press the ⬅ key to return to the Routes Menu.

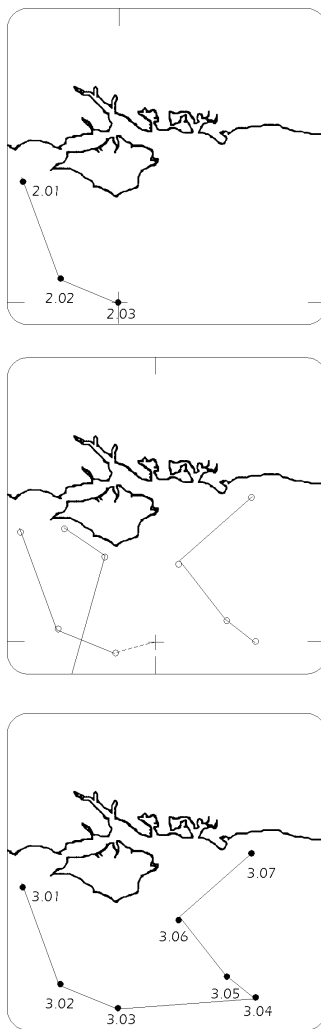


Figure 31
Link Two Routes

12.13 Display All Routes

Select this option from the Routes Side Menu and the screen zooms out far enough to temporarily display all routes that are entered (unless the zoom limit is reached before they can all be seen). The maximum chart scale is 500 nm.

12.14 Clear All Routes

Select this option only if you wish to delete all six routes. When the **SELECT** key is pressed you will be asked to confirm the instruction and given the chance to cancel.

12.15 Editing Waypoint Information

As with Marks and Events each Waypoint has its own Pop-Up Window containing identification and position information. If the Pop-Up Window is not visible move the map cursor over the Waypoint you wish to edit.

Once the Pop-Up Window is displayed, press the **MENU** key to access edit mode and then use the four directional keys and **SELECT** key to alter the name or identifier, change the symbol used to identify the Waypoint or amend the lat/long position.

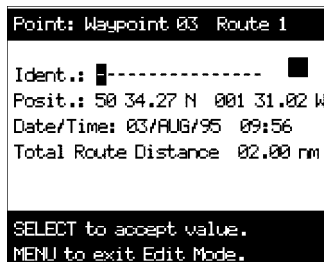


Figure 32 – Editing a Waypoint Pop-Up Window

12.16 Receiving and Transmitting Data

Some Navigators have the ability to transmit and receive Waypoint information via an NMEA interface.

Your Chartnav 343 may be able to accept and use a Route that has been entered into your Navigator, or may be capable of transferring a Route entered into the Chartnav to the Navigator. You will need to consult your Navigator manual to determine whether this facility can be used.

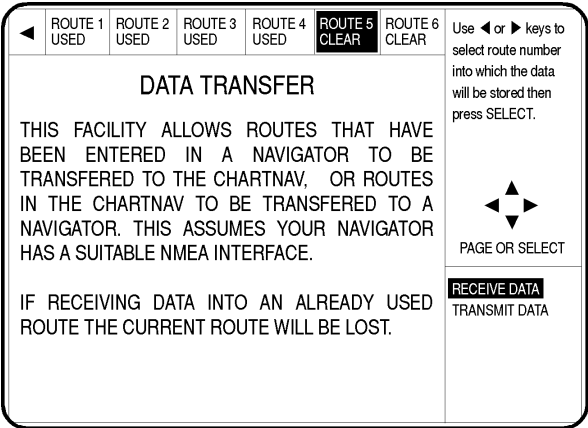


Figure 33 – Data Transfer Menu

Receive Data

Having entered a Route into your Navigator ensure the Navigator is set up ready to transmit.

On the Chartnav access the Routes Menu and scroll down the Side Menu to highlight TRANSFER ROUTE DATA, press **SELECT** and the Data Transfer Screen will be displayed. RECEIVE DATA will already be highlighted on the Side Menu so use the ⬅ and ➡ keys to select the route number you wish to store the data in. Once you have highlighted the relevant route number press the **SELECT** key.

The Chartnav will confirm that it is awaiting the data and gives the option of aborting the procedure, if required. The data should now be transmitted by the Navigator and stored in the appropriate Route.



If transferring data into an already used Route the original Route will be lost.

Transmit Data

Access the Data Transfer Page as detailed above in “Receive Data”. Use the Ⓢ key to highlight the TRANSMIT DATA option on the Side Menu. Ensure that your Navigator is set to receive the data, then use the ⬅ and ➡ keys to highlight the route number you wish to send. Once this is selected press the **SELECT** key. The Chartnav will then confirm that the data has been transmitted.

13. USING TARGETS

To create and use Targets the Chartnav 343 must be connected to a position-finding instrument such as a GPS or Decca/Loran and the Chartnav must be receiving a reliable fix.

You may choose to use your Chartnav 343 to steer to a single point Target or to follow a route, see section 3.

Single Point Route Following

This is where a single point on a chart is chosen and made the 'Target'.

Multiple Waypoint Route Following

This is where a route on the chart is chosen, a Waypoint is made the "Target" and the route is followed in the desired direction.



The vessel will immediately turn towards the Target when Navigator Control is engaged. This may be a large course change!

With Navigator Control selected, engage Navigator Control on your Autopilot. The vessel will turn onto that track. The Cross Track Error information will then keep the vessel on course.

As the vessel approaches the Target Waypoint the Waypoint Arrival Alarm will be triggered.

If the Chartnav is set to Manual Route Following (see section 14.5), when the Waypoint is reached, you have to manually select the new Target Waypoint. Position the cursor on the next waypoint and press the **SELECT** key.

If Automatic Route Following has been set, the Chartnav will automatically move the Target to the next Waypoint in the route and transmit the new course to your autopilot.

When the Final Waypoint is reached your Autopilot will continue on its last heading. Regain Manual Control on your Autopilot.

13.1 Clearing the Target

To clear a Target, position the map cursor over the Target to access the Pop-Up Window.

A prompt at the base of the window will read "SELECT to delete Target". Simply press the **SELECT** key to execute the deletion, the Waypoint, Mark or Event will return to its usual symbol and the line drawn from the vessel's position will be cleared.

14. CUSTOMISING YOUR CHARTNAV 343

Selecting the Plotter Menu gives access to further menu options, like the Track, Lat/Long and User Settings which provide a wide range of functions to enable you to modify the PLOTTER Page features and other Chartnav settings.

14.1 The TRACK Menu

The Track Menu controls the recording and drawing of a track on the chart to show the path that the vessel has travelled.

To view or adjust the Track settings enter the menu system using the **MENU** key and press **SELECT** to enter the Plotter option. This will call up a further menu, scroll along to the TRACK option, once this is highlighted the Track options are displayed in the Side Menu.

The first option allows you to turn the tracking function ON or OFF, simply highlight TRACKING and use the **SELECT** key to toggle between the two settings.

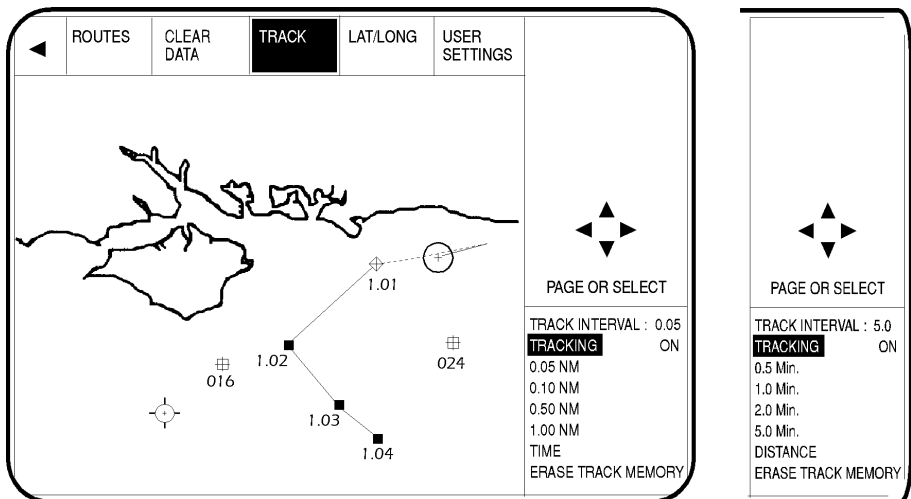




Figure 34 – The Track Menu

If the tracking is switched ON you may choose to record your track over either a time or distance interval. Press the **SELECT** key to change the setting.

You will notice that as the interval option changes, the setting values will also alter to reflect the chosen interval. Using the  and  keys highlight the desired time or distance setting and press the **SELECT** key. The current setting will be shown at the top of the Sub-Menu.

The Chartnav will record your position every 0.05, 0.1, 0.5 or 1.0 nautical miles or 0.5, 1.0, 2.0 or 5.0 minutes depending on your selection.

A maximum of 1,000 points can be stored, so choose the interval based on your needs. If you choose a large track interval, for example, 1.0 nautical miles, and follow a course with turns less than a mile apart, you may not have enough track points, recorded to redraw the track as it was actually travelled.

When in Charting Mode the number of points remaining, shown as a percentage of track memory remaining, is displayed in the Data Display Window on the PLOTTER Page. When the memory is full the Chartnav will continue to record new positions but the oldest part of the track will be lost as new points are added.

When tracking is ON, the vessel's track will automatically be drawn on the chart as the vessel moves. When the screen redraws the full track will be plotted gradually, as a background activity, starting at your present position and working backwards to fill in the entire track.

While sections of the track are being drawn you have full use of the keyboard and Trackerpad.

To delete the current track memory simply highlight the ERASE TRACK MEMORY option and press **SELECT**.

When you have finished making the appropriate selections, press the **PAGE** key to return to the PLOTTER Page.

14.2 The LAT/LONG Menu

This menu is again accessed via the Plotter Menu. From the PLOTTER Page press the **MENU** key and the main menu will appear. Press **SELECT** to access the Plotter Menu and then scroll along the new menu headings to highlight the LAT/ LONG option. With this highlighted the Lat/Long options will be shown in the Side Menu.

The LAT/LONG GRID option allows you to turn the chart grid ON or OFF. With this option highlighted use the **SELECT** key to toggle between these two settings.

The POSITION LIBRARY option allows access to your Position Library. This contains all the Marks, Events and Waypoints that you have entered, they are sorted into groups by Route number and by Waypoint number, for easy reading.

To open the library use the  and  keys to select the POSITION LIBRARY option and press **SELECT**.





POSITION LIBRARY						Distance and Bearing from SHIP POSITION.
ROUTE NO	IDENT	LATITUDE	LONGITUDE	DISTANCE	BEARING	
ROUTE 1	01	50 42.00 N	001 41.00 W	000.0 nm	000 mag	  PAGE
ROUTE 1	02	50 41.65 N	001 51.85 W	002.7 nm	080 mag	
ROUTE 2	01	50 21.91 N	001 34.18 W	019.7 nm	129 mag	
ROUTE 2	02	50 25.75 N	001 40.95 W	014.0 nm	127 mag	
ROUTE 2	03	50 31.79 N	001 41.25 W	011.8 nm	101 mag	
ROUTE 2	04	50 31.79 N	001 53.14 W	004.4 nm	112 mag	
ROUTE 2	05	50 33.03 N	001 59.45 W	000.2 nm	109 mag	
ROUTE 3	01	50 29.49 N	001 54.64 W	004.8 nm	143 mag	
ROUTE 3	02	50 28.05 N	002 04.42 W	005.8 nm	216 mag	
ROUTE 3	03	50 23.83 N	001 54.64 W	009.8 nm	166 mag	PAGE : 01 / 02
ROUTE 3	04	50 12.29 N	001 53.44 W	021.2 nm	174 mag	
ROUTE 4	01	50 29.49 N	001 54.64 W	004.8 nm	143 mag	
ROUTE 4	02	50 28.05 N	002 04.42 W	005.8 nm	216 mag	
ROUTE 4	03	50 23.83 N	001 54.64 W	009.8 nm	166 mag	
ROUTE 4	04	50 12.29 N	001 53.44 W	021.2 nm	174 mag	
ROUTE 4	05	50 12.00 N	001 43.21 W	023.5 nm	158 mag	
.....	009	50 27.96 N	001 26.81 W	021.5 nm	109 mag	
.....	010	50 34.27 N	001 31.02 W	018.3 nm	091 mag	
.....	024	50 34.56 N	001	008.2 nm	085 mag	

Figure 35 – The Position Library





If the library has more than one page you may scroll through the pages using the  and  keys.

In Charting Mode the distance and bearing information shown in the table relates to the map cursor's position, in Navigate Mode these relate to the vessel's position. A prompt at the top right of the screen confirms which of these applies.


To exit the Position Library and return to the Lat/Long Menu press the  key. To leave the Position Library and return to the PLOTTER Page press the **PAGE** key.

The ENTER LAT/LONG option allows you to enter a specific co-ordinate which the cursor will instantly move to. This option has largely been superseded by the Pop-up Windows, where a specific co-ordinate can be used to accurately place a Mark or Waypoint at a known position.

In Navigate Mode you will not be able to enter a Lat/Long position, this is to avoid placing a position off the visible chart.

To enter a position highlight ENTER LAT/LONG, press the **SELECT** key, the vessel's position is displayed. Use the  and  keys to amend the digits and then use the  and  keys to move along the digits, as required.

Once you have completed your entry press the **SELECT** key to confirm the co-ordinates or the **PAGE** key to abort the procedure.

To exit the Enter Lat/Long Menu and return to the Lat/Long Menu press the  key. To leave the Position Library and return to the PLOTTER Page press the **PAGE** key.

14.3 The USER SETTINGS Sub-Menu



The fifth option in the Plotter Menu is the User Settings Menu. When this is highlighted and the **SELECT** key pressed the menu options in the Top Menu Panel change to give a further four menus Chart Features, Installation Settings, Correct Position and Lighting.

14.4 Chart Features

Selecting Chart Features displays a further Sub-menu containing:

- Land Settings Land Marks, Rivers and Lakes.
- Marine Settings Depth Lines, Spot Soundings (minimum/ maximum range can be set), Water Turbulence.
- Nav-Aids Settings Lights, Buoys and Beacons, Tracks and Routes, Attention Areas.
- Other Settings Names, Chart Boundaries, Track Plot Mode. Chartnav 343 Colour – Course Up and Resolution.

Various features will be displayed in the Side Menu. It is from here that the features and chart layers are turned on and off.

Simply use the  and  keys to highlight an option, then the **SELECT** key to switch it either ON or OFF.



The symbols used closely represent those normally found on Traditional Paper Charts.

The screen redraw time is reflected in the number of features switched on.

14.5 Install Settings

The second option to be found under the User Settings Menu is the Install Settings Sub-Menu. With this option highlighted in the Top Menu Panel, press the **SELECT** key to enter the Install Settings Sub-Menu itself.

The installation settings found in this sub-menu are usually set up during installation and rarely changed once the unit is configured to your requirements.

Use the  and  keys to highlight a setting and then the **SELECT** key to cycle through the options available, these are listed in a panel across the bottom of the screen.

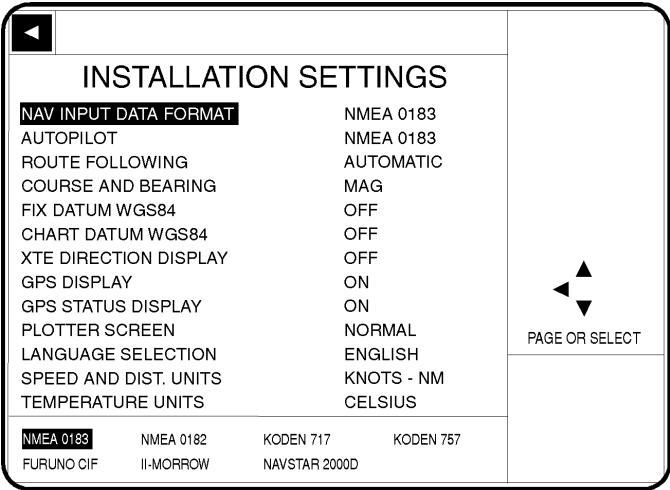


Figure 36 – Installation Settings Menu

Nav Input Data

This option selects the format of the data being received by Format the Chartnav 343 from your Navigator. The options are:

NMEA 0183	NMEA 0182	KODEN 717
KODEN 757	FURUNO CIF	II-MORROW
NAVSTAR 2000D		

Autopilot

This setting enables the Chartnav 343 to output information to an autopilot, you must, however, ensure that your autopilot is correctly configured to receive the data.

To allow the Chartnav to output data you must turn this function on by selecting the data option most suited to the autopilot from the options available:

OFF NMEA 0180/CDX NMEA 0183 NMEA 0180

When one of these options is selected the setting is automatically switched ON, to stop the autopilot data output facility from functioning simply select the OFF option.

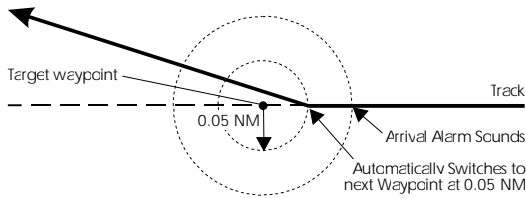
Route Following

This setting changes the way the Chartnav 343 will behave when it reaches a Waypoint in a Route that it is following.

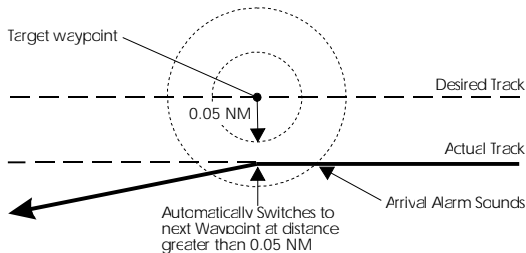
Manual: when the Waypoint is reached, the Chartnav gives an alarm but does not change course. You must then select the next Target Waypoint manually.

Automatic: when the Waypoint is reached, the Chartnav will automatically make the next Waypoint in the route the Target and change course to steer to it. The Waypoint Arrival Alarm will warn that the Waypoint is approaching. Be cautious when the end of the Route is reached because the Chartnav will continue on its last heading until new instructions are given to it.

The method by which the Chartnav determines that a Waypoint has been reached is either:



- a) The vessel's position arrives within 0.05 nautical miles of the Target Waypoint.



- b) The vessel starts to pass the Target Waypoint at a perpendicular distance greater than 0.05 nautical miles.

Figure 37 – Route Following: Automatic Waypoint Arrival

Course and Bearing

This setting allows you to choose between Magnetic or True bearings and courses for use on the Chartnav's displays and in calculations. Please note, however, that Magnetic Bearings are only available whilst a data card is being used. Once the Chartnav's internal maps or the basic world map are used the Chartnav will default to True Bearings. A Pop-Up Window will be displayed to warn of this change.

Fix Datum and Chart Datum WGS84

As the earth is neither smooth nor exactly spherical Navigational charts have been drawn using various theoretical models of the earth's surface, often for localised areas.

With the advent of GPS, which is a global system, a global model of the earth's surface was required. WGS84 (World Geodetic System 1984) is the latest model which is used by most modern navigation receivers.

A local fix position correction may be required if a position calculated by WGS84 is plotted on a chart using a local model.

These settings allow you to turn this feature OFF or ON to match the datum that you are using.

XTE Direction Display

In Normal Operation you can choose to display the Cross Track Error (XTE) while in Navigate Mode, viewing the PLOTTER Page . This display is in the form of a Bar Graph across the top of the display. The total error, in 100ths of a nautical mile, is displayed in the centre window. Chevrons either side of the window indicate the direction the vessel needs to move to correct the error. This facility is not available on a Fullscreen Display.



If the XTE Direction Display is turned ON the display will only appear once a Target has been entered and the bearing calculated.

GPS Display and GPS Status Display

As noted previously in the manual the last two information pages in the Page Cycle, the NAVIGATION DATA and GPS STATUS Pages, may be switched OFF to remove them from the cycle, thereby leaving a two page cycle. In this menu the GPS Display refers to the NAVIGATION DATA Page.

Plotter Screen

This option determines the way the PLOTTER Page will be displayed when the unit is turned on. If NORMAL is chosen the PLOTTER Page will be shown complete with the Data Display Window. Alternatively selecting FULL will give a Fullscreen Chart Display.

Language Selection

This sets the language that will be used throughout the displays. Once this option is highlighted the language options available will be listed at the base of the screen, simply use the **SELECT** key to cycle through the options until the desired language is highlighted.



Speed, Distance and Temperature Units

These options set the units that the Chartnav will use for its displays.

14.6 The **CORRECT POSITION** Menu

This Sub-Menu is found under the User Settings option of the Plotter Menu.

From the PLOTTER Page, press the **MENU** key. The main menu will appear. Plotter will already be highlighted so simply press the **SELECT** key.

The menu options will change. Use the  key to highlight the User Settings option and press **SELECT** again. Once again a new menu heading will appear. Use the  key to scroll to the Correct Position option.

Once this is highlighted the Correct Position controls will be displayed in the Side Menu.

The Correct Position function allows you to offset the displayed vessel's position from the navigator's fix position. Use extreme caution when using this function and be aware that only small corrections should be necessary.

Check the Chart Datum and Fix Datum before making a correction.

If a large error is observed between the navigator's fix position and your known correct position, it may be as a result of an unreliable fix from your navigation receiver. If you enter a correction for this error and later the fix becomes reliable again, the correction now becomes an error that you have entered!

Be very suspicious of errors larger than one mile. The Chartnav will only accept corrections of up to 10.0 nautical miles.

The first line simply allows you to switch the correction function ON or OFF. Highlight the option and press the **SELECT** key to change the status.

The second option enables a correction to be entered:

Ensure a fix is being received from your position-finding instrument. Highlight COMPUTE CORRECTION but do not press the **SELECT** key yet.

Use the Trackerpad to place the cursor at your known good position. The co-ordinates of the cursor are shown just above the CORRECTION ON/OFF option so that you can zoom in and be very accurate.

It must be stressed that if the above procedure is not followed accurately you may have a considerable error in your displayed vessel's position.


To summarise:


When correction is OFF the vessel's position symbol will always be the position indicated by your navigation receiver. If a new correction is computed but the correction is set to OFF the correction will be calculated but not used until you switch the correction to ON. Only then will the vessel's position move to the new location.



14.7 The LIGHTING Menu

Adjacent to the Correct Position option in the User Settings Menu is the lighting control options.

From the PLOTTER Page, press the **MENU** key. The main menu will appear.

Plotter will be highlighted, press the **SELECT** key and a new menu will be shown. Use the  key to scroll across and highlight the User Settings option. Press the **SELECT** key again.

The menu options will change as you enter the User Settings Menu. Use the  key to highlight the Lighting option.

These settings should be adjusted using the  and  keys to find the combination that gives the clearest display image. Remember the display must be comfortable and easy to read.

15. INSTALLING YOUR CHARTNAV 343

15.1 Before You Start

Before commencing the installation of your new Chartnav 343 system please carry out the following checks:

- that the correct items have been delivered
- that the units are undamaged
- that you have a power cable of a suitable gauge to supply power to the system
- that you have a Circuit Breaker of a suitable size for the system
- that the cables supplied with the unit are of sufficient length and that you have suitable terminal blocks and cables to complete your installation.

If you find an error please contact the supplier of the product immediately.

Before drilling or cutting any holes, please consider the exact location and cable routing that is required for each unit. Please read this Installation section and the installation information supplied with any associated equipment, before you install the Chartnav 343 system.

15.2 Suggested Procedure

We suggest that the following procedure will allow you to install the system encountering the least problems.

- Read this manual, then select the best position for the unit.
- Mount and install the unit as directed.
- Then proceed to connect the cables to the unit as shown in the section 15.12 Installation Schematic.

Finally

- Connect the supplied fused with a 1 Amp in-line fuse.
- In the Installation Settings Menu, select the correct interface with other units connected to your system.

15.3 Good Wiring Practice

Having decided on the location and position of each unit it is essential to check the cable runs to ensure that there are no problems.

All cable runs should be kept as clear as possible from other cables carrying RF (Radio Frequency), pulsed signals or heavy currents (such as winches etc.). At least 3 ft. clearance is advised. Take particular care to ensure the maximum clearance from radio transmitting aerials.

If it is necessary to extend any of the cables, the same type of cable must be used.

All DC supply cables should be kept as short as possible and should be taken from the battery via a switch /fuse or Circuit Breaker of a suitable rating for the system being installed.

It is good practice to cleat all cables to fixed points at no less than 0.5 m (18") spacing and where cables pass through bulkheads, protect the cable with a suitable grommet or sleeve.

Key to the Colour Coding of Cables

R	Red	Rouge	Rot	Rojo
B	Blue	Bleu(e)	Blau	Azul
BK	Black	Noir(e)	Schwarz	Negro
BN	Brown	Marron	Braun	Marron
V	Violet	Violet(te)	Violett	Violeta
G	Green	Vert(e)	Grün	Verde
W	White	Blanc(he)	Weiss	Blanco
GY	Grey	Gris(e)	Graua	Gris
Y	Yellow	Jaune	Gelb	Amarillo
O	Orange	Orange	Orange	Naranja
NC	No connection	Pas de lien	Kein anschluss	No conectar

15.4 The Chartnav Control Unit

This should be installed in a position convenient for the Helmsman to operate it, also taking into account access to the Chart Card Reader slots and the tilt and swivel movement available.

15.5 Mounting

The Chartnav Control is supplied with a trunnion swivel mount which allows the unit to be positioned to obtain the best viewing angle. The Chartnav 343 can be mounted on a dashboard or overhead.

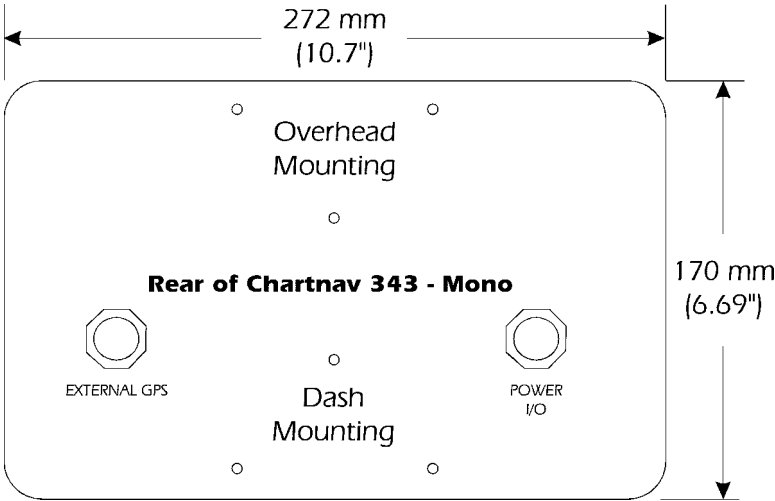


Figure 38 – Dimensions

15.6 Clearance Dimensions

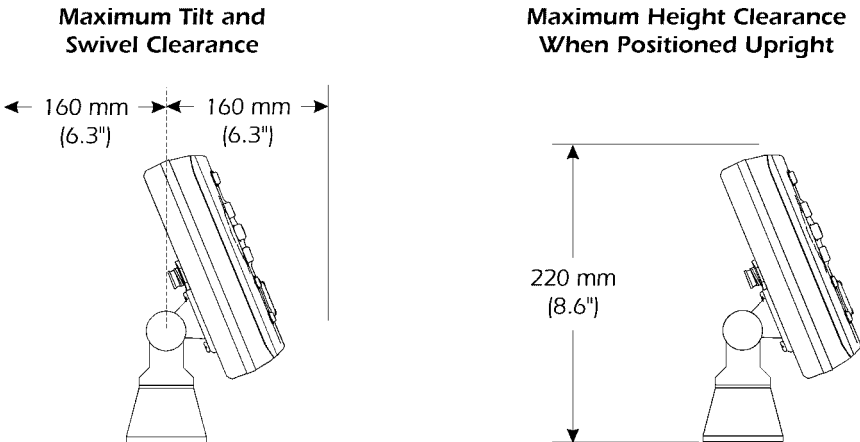


Figure 39 – Clearance

15.7 Template

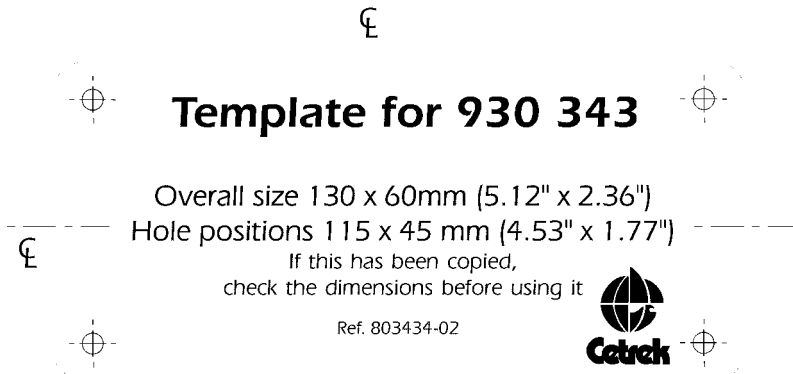


Figure 40 – Template (not to scale)

15.8 Connecting Your Position-Finding Instrument

To enable the Chartnav 343 to plot the vessel's position and track its course the Chartnav Control Unit must be connected to a position-finding instrument.

Connect your position-finding device as shown in the Installation Schematic. NMEA Navigators, for example the 930 940 GPS Antenna, should be wired to the 6 Way female cable connected to External GPS Port on the Chartnav Control Unit.

If your instrument is able to output combined Instrument and navigator data, it should be connected via the 7 Way Female cable to Power I/O Port.

The Chartnav 343 should have only one source of navigation data, connected either to External GPS Port or Power I/O Port as detailed above.

If navigator data is being sent via Port 2, C-net data such as depth or speed (with no GPS information) may be connected through Port 1.

15.9 Connecting An Autopilot

An Autopilot should be connected to the Chartnav 343 using the Brown and Grey wires of the 7 way cable, (as shown in the Installation Schematic diagram in section 15.12).

15.10 Route Transfer Connections

Some Navigators have the ability to transmit and receive Route information via an NMEA interface.

Your Chartnav may be able to accept and use a Route that has been entered into your Navigator, or may be capable of transferring a Route entered into the Chartnav to the Navigator.

The Chartnav is able to output and accept RTE and WPL messages. It has a maximum output capability of eight Waypoints per Route.

You will need to consult your Navigator manual to check which sentences can be received and transmitted by the Navigator and therefore determine whether the Route Transfer facility can be used.

REMEMBER

The Navigator and the Chartnav must be configured to transmit and receive respectively, before data can successfully be transferred.



Incorrect wiring (e.g. reverse polarity) can cause irreparable damage to some equipment and is not covered by the Cetrek warranty agreement.

15.11 Connecting the Power Supply

Make any NMEA, C-net Serial Data and autopilot connections as detailed in the previous paragraphs and as shown on the Installation Schematic on the following page.

Check that these connections are correct and then connect the Pink and Screen wires from the Power I/O socket on the rear of the Chartnav 343 to the appropriate terminals on your vessel's battery system, ensuring that a 1 Amp in line fuse is used. The instrument is designed to operate from 10–35 V DC (12–24 nominal), with a maximum power consumption of 6 Watts.

If possible the power leads should be run as a bundled pair all the way back to the power source. Make certain to use a fuse or Circuit Breaker as close to the source of power as possible. Avoid using a shared Circuit Breaker.

15.12 Installation Schematic

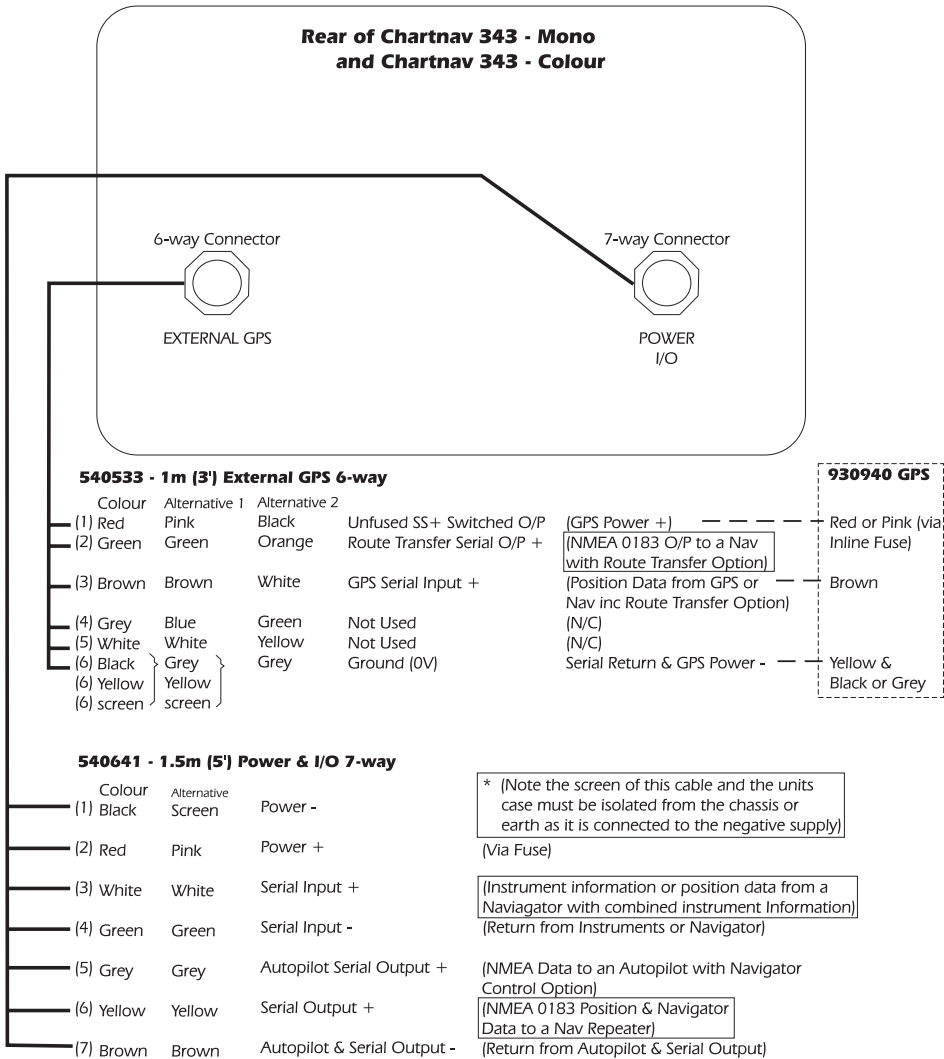




Figure 41 – Installation Schematic

16. INSTALLATION SETTINGS

Having connected the equipment, double check the wiring to ensure that it is correct. The next step is to complete the initial installation settings. These ensure that the Chartnav 343 is able to communicate with any navigator or autopilot connected to it.

Switch on the power supply to the Chartnav 343 unit and turn the unit on using the **POWER** key. The Chartnav will carry out a self-test routine and display a caution page.

Once you have read this page carefully, press the **SELECT** key to continue. After a brief delay the Plotter Screen will be displayed.

Access the menu system using the **MENU** and **SELECT** keys. Then, using the  and  keys, highlight the USER SETTINGS heading and press the **SELECT** key. Refer to Customising Your Chartnav Section 14.5 Installation Settings.

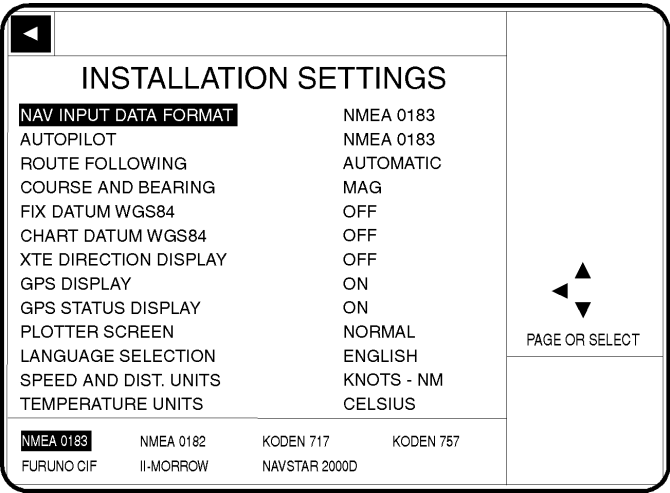


Figure 42 – Installation Settings Menu

16.1 NMEA Messages

SOG / COG	RMA, RMC, VTG
Fix	GGA, GLL, RMA, RMC
VMG	VPW
Trip Log Dist	VLW
Trip Log Time	PMNXT
Water Speed	VHW
Water Heading	HDG, HDM, VHW
App. Wind Speed	MWV, VWR
True Wind Speed	MWD, MWV, VWT
App. Wind Dir.	MWV, VWR
True Wind Dir.	MWD, MWV, VWT
Water Temp	MTW
Depth	DBT, DPT
Date / Time	ZDA, GGA, RMC, GLL
Mag. Variation	RMA, RMC
DGPS Fix Flag	GGA
HDOP	GGA
Antenna	GGA
Satellite Info	GGA, GSA, GSV

No target, NMEA O/P, Pilot O/P

GLL, VTG, BWC, GGA, RMC and ZDA

With Target, NMEA O/P, Pilot O/P

GLL, XTE, BOD, APB, APA, WCV, VTG, BWC, GGA, RMB, RMC and ZDA

Route Transfer

RTE and WPL

17. DIAGNOSTIC TESTS

When the Chartnav is turned on the unit will carry out a self-test which will show any problems with the Eprom, hardware, Chart Cards or software.

However if you have connected your position-finding device according to the instructions, selected the correct input and output data formats and are still having problems with your Chartnav, the following Diagnostic Tests should help determine the problem.

Switch the Chartnav off. While pressing and holding the **SELECT** key, press the **POWER** key to turn the unit on. Continue to hold the **SELECT** key until you hear several beeps. The LCD will then display the following menu:

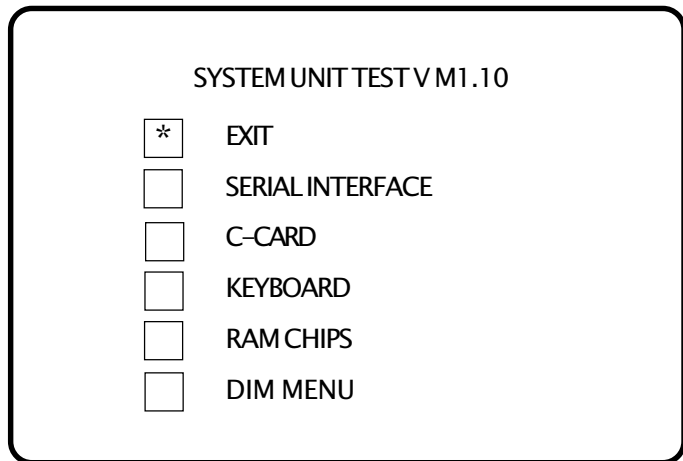




Figure 43 – Diagnostic Test Menu

There are two ways to choose test options. Use the  and  keys to move to your selection, an asterisk (*) will indicate which option is selected. Press the **MENU** key to choose. The **MENU** button is also used to increase or decrease options.

Alternatively you can use the Trackerpad to make your selection, as soon as you position the cursor on the appropriate box the Chartnav will enter that option.

17.1 The Serial Interface Test

If you are having problems receiving data from the position-finding instrument, the first test in the menu, the Serial Interface Test, should help determine the problem. When you select this test a new menu will appear.

17.2 Input Data Display

The Input Data Display allows your Chartnav to act as a computer terminal and display the incoming data exactly as it is received. You should be able to recognise a string of characters which may look something like this:

```
j$GPGLL,4142.04,N,07035.26,W
```

If the data displayed on the LCD is unrecognizable, you may have selected the wrong input parameters, see the next section for a list of common standard input parameters) for your particular receiver, for example NMEA 0182 instead of 0183. Check your receiver manual to be sure that you have selected the proper interface format.



If the LCD is blank, you may have a broken connection and no data is being received, or the unit may not be set up to look for the correct signal source (UART), see Change Parameters which follows.

17.3 Change Parameters

You can check to make sure that the Chartnav is receiving data properly, by selecting Change Parameters, which allows you to change the parameters of the serial interface. When you select this option from the Serial Interface Test Menu a further menu will be displayed, as shown below.

The parameters should default to those shown above (and highlighted in the list below) which are the standard input parameters for NMEA 0183.

Baud Rate:	300, 1 200, 2400, 4800 or 9600
Word Length:	7 Bit or 8 Bit
Parity:	Odd, Even, None
Signal Polarity:	Normal, Inverse
Signal Source:	UART 0, UART 1

To alter the parameters move the asterisk (*) to the appropriate parameter using the  and  keys, then scroll through the available settings (shown above) using the **MENU** key.

UART 0 is for input on the Power I/O Port Serial + (White) and Serial – (Green) Input. UART 1 is for Input on the External GPS Port, GPS Serial Input + (White) and Ground 0V (Grey).

Set the parameters to those that match the navigation receiver and return to the Input Data Display Test to confirm that the data is correct. These settings are only used in the Input Data Display Test and are ignored by the Chartnav in its normal operation. It may be necessary to experiment with the input parameters to determine exactly what format your receiver is providing.

STANDARD INPUT PARAMETERS

	Baud Rate	Word Length	Parity	Polarity
C-net NMEA Data	4800	8-bit	None	Normal
NMEA 0183	4800	8-bit	None	Normal
NMEA 0182	1200	8-bit	Even	Normal
Furuno CIF	4800	7-bit	Even	Normal
Koden 757	4800	8-bit	None	Inverse
Koden 717	4800	8-bit	None	Inverse
II Morrow	1200	7-bit	None	Normal
Navstar 2000D	110	8-bit	None	Normal

(The Diagnostic Tests are unable to display the Navstar 2000D input parameters).

17.4 C-Card Test

Allows you to check the CF95 Chart Cards when you select this test a new menu will appear.

To do the test move the asterisk (*) to the C-Card Box with the  or  keys and press the **MENU** key.

If the unit displays a fault CRD 1 = The left slot, CRD 2 = the right slot.

Press any key to exit the test page to return to the system unit test page move the asterisk (*) to the exit box and press the **MENU** key.

17.5 Keyboard Test

The keyboard Test allows you to check your keyboard for malfunctions. A reproduction of the keyboard will be drawn on the screen. Whenever a key is pressed, a cross should appear in the correct position on the keyboard diagram and the unit should beep. Due to the nature of its function the **POWER/OFF** key cannot be tested. To terminate the keyboard Test position the cursor on the square adjoining 'EXIT', the unit will then return to the System Unit Test Menu.

17.6 RAM-Chips Test

If you seem to be having problems with your unit, one of the best things to do, is to run a check on the internal memory or RAM. If the Chartnav exhibits unusual behaviour or appears to be malfunctioning, it may be possible to correct the problem by clearing the RAM.



This operation will erase all Marks, Events, Routes, Waypoints and stored Track Plots. It will also return all selectors (Input Data Format, Autopilot selection etc.) to the original default settings or values.

To clear the system RAM, select the RAM-Chips Test option from the main System Unit Test Menu. The Chartnav will run an automatic test. When the automatic test is finished, press the **CHART/NAV** key to clear the RAM by pressing the **MENU** key. If at this time you do not wish to clear the RAM, press any other key.

17.7 DimMenu

This provides an alternative means of adjusting the LCD contrast and backlighting.

If You Need Assistance

If you do ever need to contact your Cetrek Dealer or Distributor, it would save time if you make a note of the following details for them:

Model Number:

Serial Number:

Software Version Number:

A description of the failure.



Installation Code of Practice

In addition to the installation information contained within this manual, the “Code of Practice for Electrical and Electronic Installations in Boats”, produced by the BMEA, is recommended as a useful guide.

BMEA – British Marine Electronics Association
(A member of the British Marine Industries Federation)
Meadlake Place, Thorpe Lea Road, Egham, Surrey, TW20 8HE

LIMITED WARRANTY APPLYING TO ALL PRODUCTS OF Cetrek Ltd.

- I. The Warrantor is: Cetrek Ltd. Through their Dealership.
- II. This warranty shall extend only to the original purchaser of the equipment.
- III. This Warranty applies to all equipment manufactured by, or bearing the name plaque of, Cetrek Ltd., and the warrantor warrants all such equipment to be free from defects in workmanship or material under normal use and service.
- IV. This Warranty is in effect for a period of 24 months from date of invoice from a duly authorised Cetrek distributor.
- V.
 - i. If any part of the equipment proves to be defective in workmanship or material, the warrantor will examine said equipment after it is returned to the warrantor as hereinafter stated: and
 - ii. If the returned equipment is found by the warrantor to be defective in workmanship or material, the equipment will be repaired or replaced at the warrantor's place of business without charge except for transportation charges as herein provided, and there will be no option for the purchaser to receive a refund of the purchase price until after a reasonable number of attempts to remedy the defect have been made by the warrantor.
 - iii. Only persons expressly authorised by the warrantor shall be permitted to perform warranty service. The warrantor agrees to pay a duly authorised distributor or dealer up to a maximum of two hours labour at a predetermined and fixed rate for the repair on board the vessel. The warrantor will not assume the costs of any unauthorised labour, waiting time, travelling time, overtime or correction of faulty installation, unauthorised labour, travel accommodation and/or living expense, replacement or repair of units abused or subjected to water damage (other than units designated watertight).
- VI.
 - i. If the purchaser believes any part of the equipment is defective he should return the said part within 24 months of the date of purchase to Cetrek Ltd. at the address provided herein.
 - ii. The expense of transporting the defective equipment to the warrantor's place of service shall be paid in advance by the purchaser. The return of goods by normal transportation will normally be prepaid by the warrantor.
- VII.
 - i. There are no warranties which extend beyond the description on the face here of. This warranty is expressly in lieu of all other warranties, guarantees, obligations or liabilities expressed or implied by the warrantor or its representatives. All statutory or implied warranties other than title are hereby expressly excluded to the extent to which they may be excluded by law. This warranty will not apply where the purchaser, or others have misused, abused or failed to normally service the equipment, and the warrantor will not be liable for any damage of any kind caused by such misuse, abuse, or lack of service.
 - ii. There is no warranty coverage of any kind for defects due to water immersion or salt spray except for equipment which is designated as watertight, and equipment so designated is warranted as set forth in paragraph V herein.

iii. There is no warranty and the warrantor shall not be held liable for any damages incurred as a result of a malfunction of any part of the warrantor's products, if said damages incur during or as a result of the autopilot being left unattended by the operator. The warranty shall not be liable for any damage arising from collisions with other vessels or objects. The autopilot product, including parts thereof, is designed to assist the operator or the persons on watch to navigate accurately by maintaining an average course selected by the person on watch. The warrantor's products are not designed to, and do not, replace the persons on watch. Due to the potential of a collision with an object in the vessel's path or of an electrical, mechanical or hydraulic malfunction of the parts of the autopilot or the associated equipment of the vessel, the energised pilot should never be left unattended when the vessel is moving.

iv. The sole remedy available to the purchaser if there is a defect in material or workmanship of the equipment is as set out in paragraph V.

v. Save in respect of loss of life and personal injury, which liability can not be excluded by law, the warrantor shall have no liability for incidental or consequential damages of any kind.

vi. This warranty shall not cover defects or damage arising as a result of the faulty workmanship of any distributor, agent of the seller or dealer in the goods, or other person not being the seller or its employee in respect of the installation of the goods.

vii. The warrantor hereby notifies the purchaser purchasing as a consumer, that his statutory rights given under the Sales of Goods Act 1979 and Supply of Goods and Services Act 1982 are not affected by this warranty.

VIII. The purchaser's obligations in the event of defect are to:

i. Prepare a written detailed statement to the warrantor's factory at the above indicated address.

ii. Deliver the written statement to the warrantor's factory at the above indicated address.

iii. Deliver or arrange for the delivery of the equipment to the warrantor's factory.

iv. Arrange for the return of the equipment from the warrantor to the purchaser by either agreeing to pick up the equipment at the warrantor's factory or by depositing with the warrantor sufficient funds to pay to have the equipment delivered to the purchaser by means of commercial transportation other than standard freight services (UPS ground).

IX. The purchaser hereby agrees that he has read and understands that the above warranty sets forth the exclusive warranty for this equipment.

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