E-Series Display
Operating Guide

Raymarine®

www.raymarine.com

General Operation

What can I see?

Basic Navigation

What is around me?

Where am I going?

What's under the boat?

Other functions

D6721_3

DATA
Press to access ruler, chart vectors, archive & transfer and data bar on/off functions.

ACTIVE
When multiple windows are open:
- Press to select required window.
- Press and hold to maximise current window.
- Press again to return to multiple windows.

PAGE
Press to scroll through available pages. Press and hold to select different page set or customise your own layout.

WPTS/MOB
Press to display the waypoint soft keys. Press again to place waypoint at your boat's position.
Press and hold to place a Man Overboard (MOB) marker at your current position. Press and hold again to exit MOB.

MENU
Press to access the set up menus. Press and hold to access help information.

Rotary control
Use to edit alpha-numeric values, and scroll through lists.
Turn clockwise to increase value and counter-clockwise to decrease value.
Press to move the cursor to the next character when editing text.
Use to edit symbology (VRM/EBL etc).

Softkeys
Press to select the corresponding function identified by the on-screen label

Power
Press once to turn ON.
Press again to access backlight functions and scanner controls.
Press and hold to turn the display OFF.

RANGE
Press to change the display scale so that a smaller or larger area can be seen on the screen.

Chart Card slot
Open the cover to install CompactFlash cards.

Trackpad
Used to control the on-screen cursor and to scroll through menu items. Press the corresponding edge of the trackpad to move the cursor horizontally, vertically or diagonally. Press and hold to move rapidly over larger distances.

CANCEL
Press to cancel the selected on-screen option when editing data; also used to return to the previous set of soft keys or menu.

OK
Press to select an on-screen option, or return to the previous set of soft keys or menu.

⚠️ **WARNING: NAVIGATION AID**
This unit is only an aid to navigation. Its accuracy can be affected by many factors, including equipment failure or defects, environmental conditions, and improper handling or use. It is the User's responsibility to exercise common prudence and navigational judgements. This unit should not be relied upon as a substitute for such prudence and judgement.
Always keep a proper look-out.

D7523_1

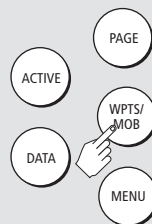## How do the controls work?

Buttons

- Access system functions or change what you see on-screen. Within the text of this document they are written in bold capitals e.g. **WPTS/MOB.**

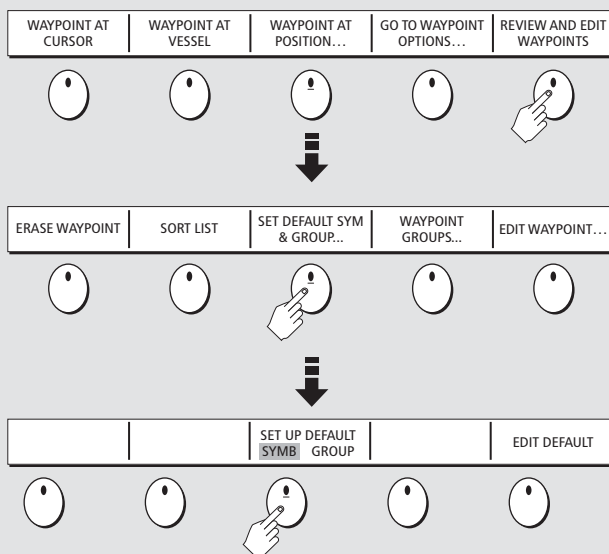- Press and hold to access short cuts - see individual buttons on facing page.

PAGE
ACTIVE
WPTS/MOB
DATA
MENU

Example:
This example shows the series of button and soft key presses required to change the waypoint default symbol or group.

Soft keys

- They change depending on application or function being performed.

- Press and hold **MENU** to display help information for the currently displayed soft keys.

- Press the corresponding key (below the screen) to select.

- Further soft keys may be displayed. If a key has several options, each press will highlight the next option.

- If a key displays a single value or a slider above, use the rotary control to adjust.

- Within the text of this document they are written in capitals e.g. SORT LIST.

| WAYPOINT AT CURSOR | WAYPOINT AT VESSEL | WAYPOINT AT POSITION… | GO TO WAYPOINT OPTIONS… | REVIEW AND EDIT WAYPOINTS |

| ERASE WAYPOINT | SORT LIST | SET DEFAULT SYM & GROUP… | WAYPOINT GROUPS... | EDIT WAYPOINT… |

| | | SET UP DEFAULT SYMB   GROUP | | EDIT DEFAULT |

This process of pressing buttons and soft keys to navigate to the required function, is simplified within this guide and represented by a strip e.g.

WPTS/MOB ➧ REVIEW AND EDIT WAYPOINTS … ➧ SET DEFAULT SYM & GROUP... ➧ SET UP DEFAULT SYMB   GROUP

The Cursor

The Cursor appears on the screen as a white cross.

To make it easier to locate on screen, the cursor changes to a circle with a cross in it, when it is moved after a 10 second period of inactivity.

WPT The cursor is context-sensitive. When it is placed over an object e.g. a waypoint or chart feature, it changes color and a label or information associated with the object is displayed. When you place the cursor over certain items, the soft keys change to enable you to access related operations.
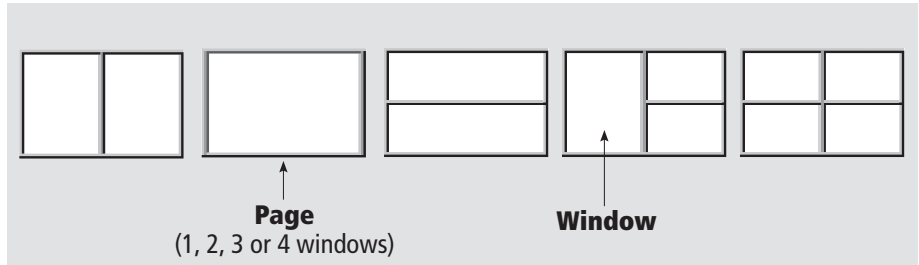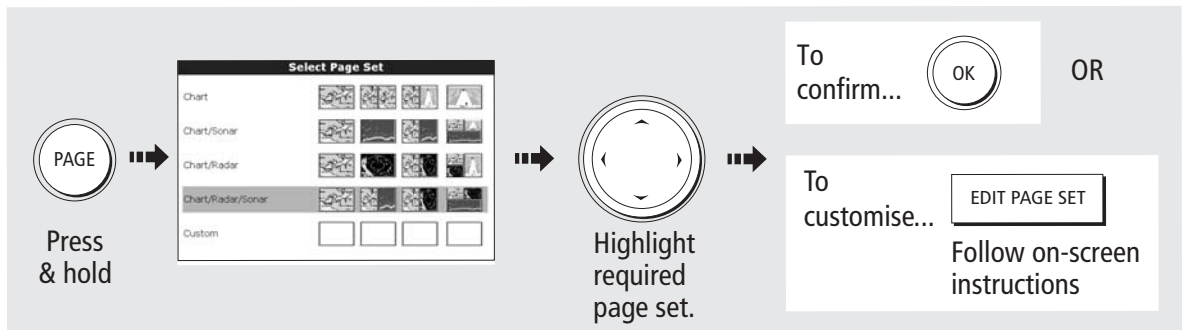
D6762_3

How do I select how the applications are displayed?

The applications are shown using a combination of page sets, pages and windows. There are four pre-configured page sets each containing five pages with a combination of windows and applications in each. These sets can be edited if required. Alternately, you can use the empty fifth page set to define the combination that suits your particular needs.
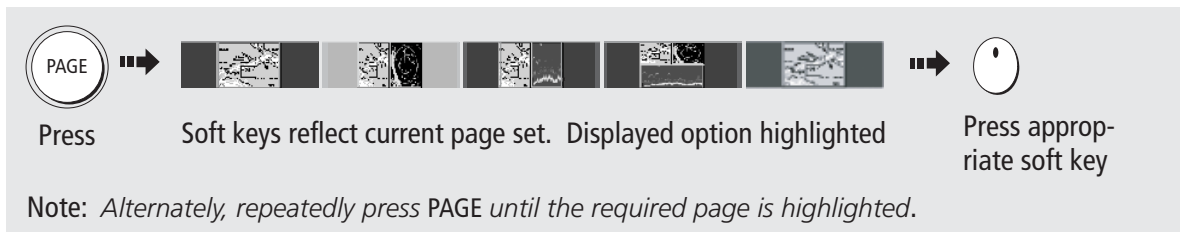
Any changes you make will be saved to the system. You can change these preferences as many times as you wish.
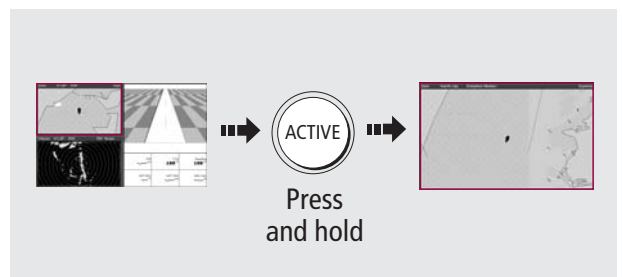
Page
(1, 2, 3 or 4 windows)

Window

How do I select the Page Set?

PAGE

Press & hold

Select Page Set

Chart
Chart/Sonar
Chart/Radar
Chart/Radar/Sonar
Custom

Highlight required page set.

To confirm... **OK**   OR

To customise... | EDIT PAGE SET |
Follow on-screen instructions

How do I select a Page?

PAGE

Press

Soft keys reflect current page set. Displayed option highlighted

Press appropriate soft key

Note: *Alternately, repeatedly press* PAGE *until the required page is highlighted*.

How do I select a Window?

The active window is bordered in red.

ACTIVE

Press to move highlight to next window.

From multiple to single windows?

ACTIVE

Press and hold

? **More information -** See the General Operations chapter of the Reference Manual

D6726_3

⚠️ **CAUTION**

CompactFlash Card
In order to protect your E-Series Display and CompactFlash cards from irreparable damage, please adhere to the following:

- **Fit the card the correct way around. DO NOT force.**
- **Ensure card door is firmly closed at all times.**
- **DO NOT use a metallic instrument (e.g. screwdriver or pliers) to aid card removal.**
- **Follow the correct procedure for removing a card (see below).**
- **DO NOT remove card during either a read or write operation.**

How do I insert a CompactFlash card?

1. Check that you are using the correct type of card. Raymarine recommend Navionics Chart cards or SAN DISK CompactFlash cards.

2. Open the chart card door, located on the front left of the display.

3. Insert the card as shown, with the lip of the card facing inwards. It should position easily. If it does not, DO NOT force it, check the direction in which the lip is facing.

4. Gently press the card home and then firmly click the chart card door shut.

Narrow Groove

Lip

D7215-1
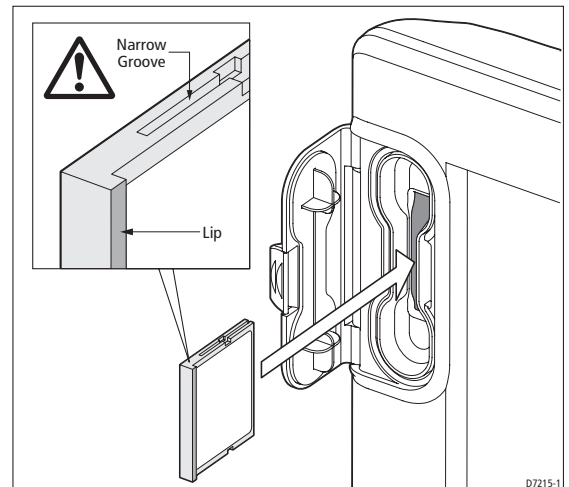
How do I remove a CompactFlash card?

... with the unit powered

1. Press **MENU**. The Setup menu is displayed.

2. Use trackpad (up/down) to highlight and then (right) to select CF CARD REMOVAL. The system will now complete its checks.

3. When instructed to do so, open the chart card door and remove the card.

4. Firmly click the chart door shut and press **OK** twice.

... with the unit powered down

1. Open the chart card door.

2. Grip the card and pull to remove it from its slot.

3. Firmly click the chart card door shut.

? More information..... See the 'General Operation' chapter of the Reference Manual.

D6724_3

What can I see?
Understanding the chart
Card No. 5

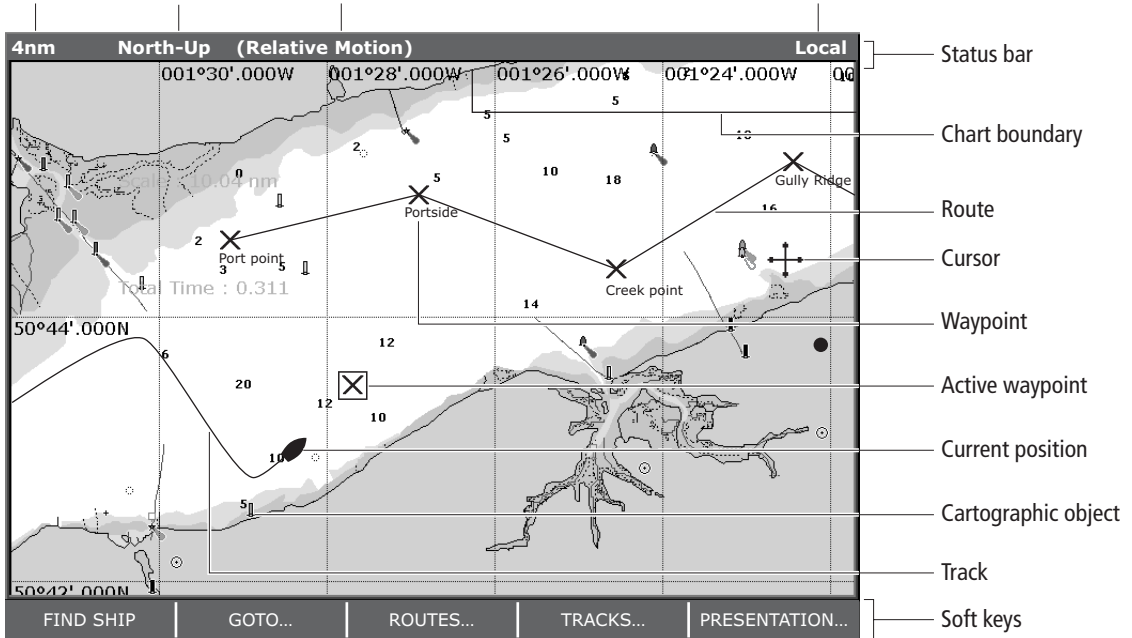| FIND SHIP | GOTO | ROUTES | TRACKS | PRESENTATION |

What can I use the chart for?

- Find where you are.
- Interpret your surroundings.
- Place waypoints at specific locations.
- Navigate to a specific point.
- Monitor where you are going.

- Record where you have been.
- Measure the distance between two points.
- Build and follow routes.
- Manage and edit routes and tracks.
- Distinguish between fixed & moving objects (radar overlay).

Chart range   Chart orientation   Motion mode   Chart view

Status bar — Chart boundary — Route — Cursor — Waypoint — Active waypoint — Current position — Cartographic object — Track — Soft keys

How do I move around the chart?

To change the scale:

- Press **RANGE** (OUT) to see a larger area of the chart.
- Press **RANGE** (IN) to see a smaller area in more detail.

To pan the chart:
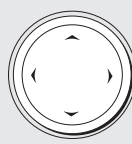
- Moves cursor. When cursor reaches window edge, chart pans to a different area.
- Press and hold to pan larger areas.

Viewing detail on the chart

- To display **additional information** on a cartographic feature: → OK

- To hide/show **individual** cartographic features:

MENU → **Setup** / Chart Setup / Cartography Setup... ▶ → OFF / ON Toggle feature as required

- To hide/show **pre-set** cartographic features:

PRESENTATION → DECLUTTER ON   OFF

? **More information . . .** See 'Using the Chart' chapter of the C-Series Reference Manual

D6727-2

What can I see?
Using the chart ...
Card No. 6

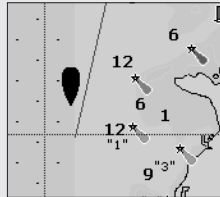| FIND SHIP | GOTO | ROUTES | TRACKS | PRESENTATION |

How do I find where I am on the chart?

The boat symbol indicates your position.

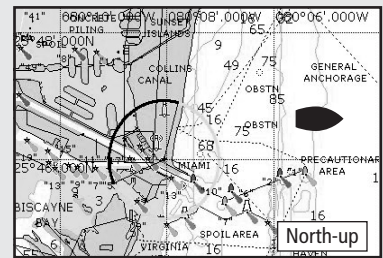If you cannot find the boat symbol on the screen:

FIND SHIP ▪▪▶

Press

The screen automatically pans to your boat's position and re-activiates the motion mode (see below - 'How do I change how my boat moves on the chart').

How do I change the chart orientation?

The **orientation** of the chart refers to the relationship between the chart and the direction that you are travelling in. It is used in conjunction with motion mode (see below) to control how your boat and chart relate to one another and how they are displayed on screen.

The default mode for chart orientation is North Up (N-up). This means that your chart is displayed with true north upwards. As your heading changes the boat symbol moves accordingly.
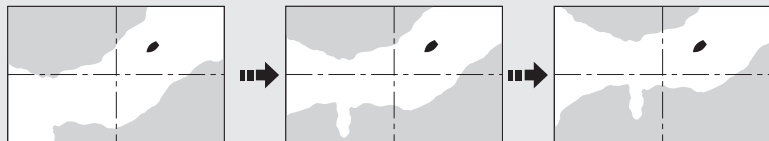
North-up

If necessary, you can change the orientation to Head Up (H-up) or Course Up (C-up), using the PRESENTATION soft keys.

PRESENTATION... ▪▪▶ CHART MODE AND ORIENTATION... ▪▪▶ ORIENTATION H-UP N-UP C-UP

Press   Press   Press

How do I change how my boat moves on the chart?

How your boat moves on the screen is referred to as the **motion mode**. The default setting for the chart is Relative Motion. This means that your boat is fixed on the screen and the chart moves relative to your boat e.g.

If necessary, you can change the motion mode to True (TM) or Autorange (AR), using the PRESENTATION soft keys.

PRESENTATION... ▪▪▶ CHART MODE AND ORIENTATION... ▪▪▶ MOTION MODE TM   RM   AR

Press   Press   Press

When you pan the chart, motion mode is suspended. If your boat is not on screen, press FIND SHIP.

? More information .... See 'Using the Chart' chapter of the Reference Manual

D6740_2

Basic Navigation
Working with Waypoints

Card No. 7

WAYPOINT AT CURSOR	WAYPOINT AT VESSEL	WAYPOINT AT POSITION ...	GO TO WAYPOINT OPTIONS ...	REVIEW AND EDIT WAYPOINTS

What is a waypoint?

A waypoint is a position marked on a chart, radar or fishfinder screen to indicate a site (for fishing, diving etc), or as a position to go to. You can place a waypoint at the cursor position, your boat's position or at a specified position (using Lat/Long or Loran TD co-ordinates). Waypoints are represented in chart or radar applications as an 'X' (this can be changed if required) and by a vertical line labelled WPT in Fishfinder. The details of each waypoint are stored in a waypoint list which can hold up to 1200 waypoints. If you have networked two or more E-Series Displays, the waypoints are stored on the master display and transferred to other displays via the SeaTalk High Speed network. If required, waypoints can be archived to a CompactFlash card or transferred to another NMEA compatible instrument. Waypoints can be renamed, edited, grouped, or erased, as necessary. To make full use of waypoint features, ensure your display is receiving heading and position data.

How do I place a waypoint ...

... at the cursor?
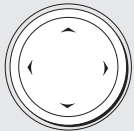
Move cursor to required position using trackpad.

Press (WPTS/MOB)

WAYPOINT AT CURSOR — Press

... at the vessel?

Press (WPTS/MOB)

WAYPOINT AT VESSEL — Press

... OR

(WPTS/MOB) Press x2

How do I navigate to a waypoint ...

... using the cursor?

Place the cursor over the appropriate waypoint.

GO TO WAYPOINT — Press

CAUTION
Always check that your route to a waypoint is safe before travelling towards it.
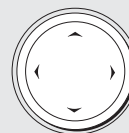
... using the waypoint list?

Press (WPTS/MOB)

GO TO WAYPOINT OPTIONS... — Press

Waypoint List

Name:	Group:	My Waypoints
Waypoint 1	Position:	50°53'.826N
Waypoint 2		001°10'.963W
Waypoint 3		
	Rng/Brg:	284° 4.315nm

Temperature:	---.-°F
Depth:	---.-ft
Date:	05/11/2003
Time:	14:59:11

Highlight required waypoint

GO TO WAYPOINT — Press

? More information ... See the 'Working with Waypoints' chapter of the Reference Manual
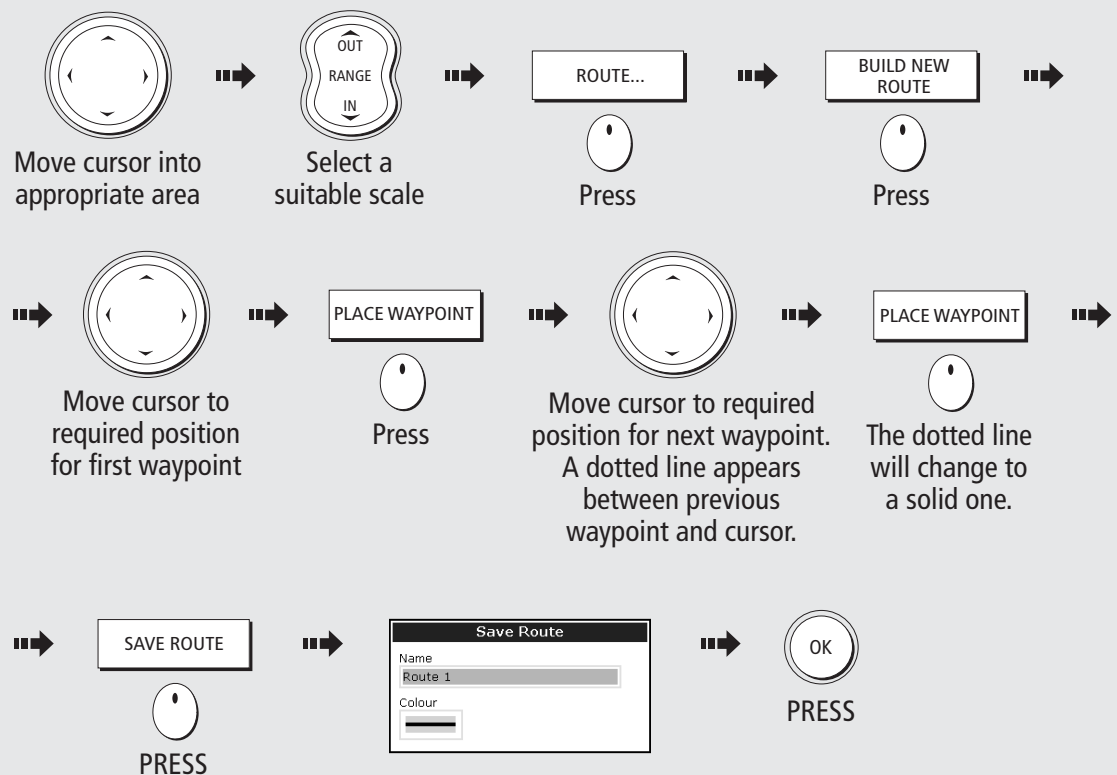
D6729_2

What is a route?

A route is made up of a series of waypoints. These waypoints can either be placed specifically for that route and/or you can use existing waypoints. You can save a route for future use or follow it immediately (Quick Route). Routes are stored in a route list. If you have networked two or more E-Series displays, the routes are stored in the master display and are transferred to the other displays via the SeaTalk High Speed network.

Routes can be named, edited, erased and archived. After routes have been created you can choose which ones are displayed on your chart.

If a route is being followed, i.e. the **active route**, the current leg is shown as a dotted line and any previous legs are removed from the screen, although any waypoints will remain displayed.

How do I build a route by placing waypoints on screen?

Move cursor into appropriate area ▶ OUT RANGE IN — Select a suitable scale ▶ ROUTE... Press ▶ BUILD NEW ROUTE Press

▶ Move cursor to required position for first waypoint ▶ PLACE WAYPOINT Press ▶ Move cursor to required position for next waypoint. A dotted line appears between previous waypoint and cursor. ▶ PLACE WAYPOINT The dotted line will change to a solid one. ▶

▶ SAVE ROUTE PRESS ▶ Save Route / Name / Route 1 / Colour ▶ OK PRESS

If you place a waypoint at the incorrect position, press UNDO WAYPOINT.

UNDO WAYPOINT Press

? More information .... See the 'Using the Chart' chapter in the Reference Manual, for more information on routes.
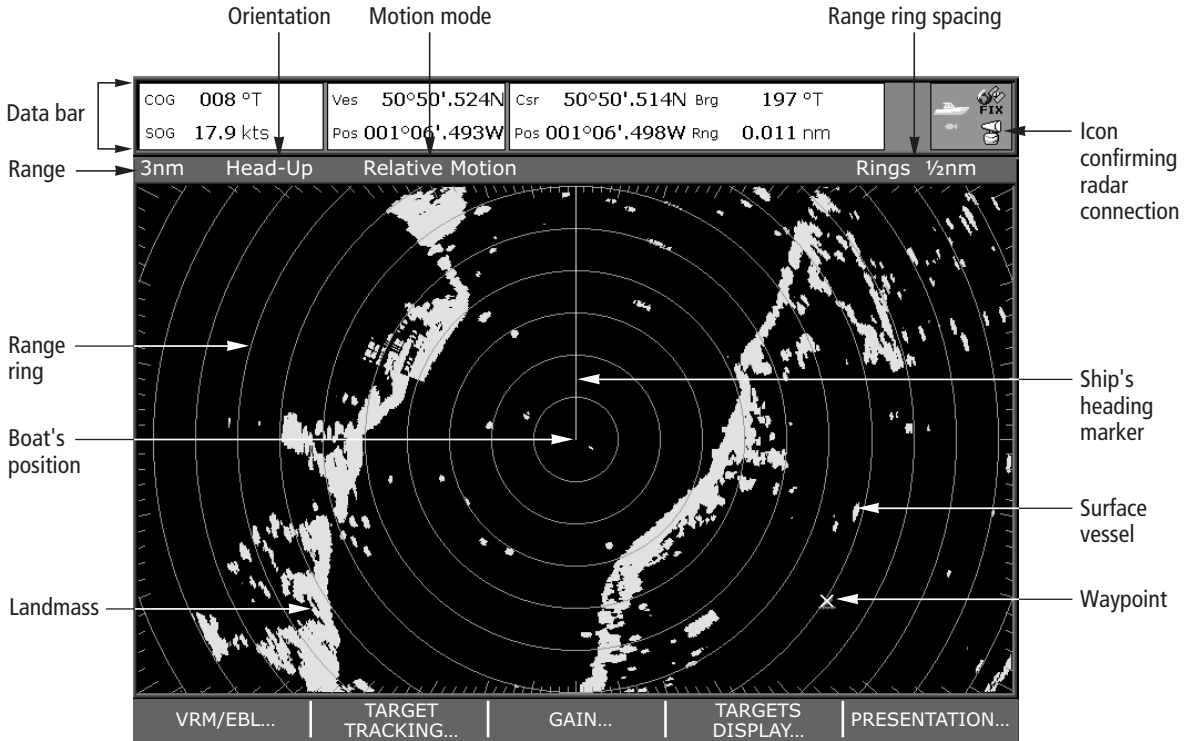
D6730_2

What does the radar show me?....

Typically your boat's position is at the centre of the display, and its dead ahead bearing is indicated by a vertical heading line, known as the Ship's Heading Marker (SHM).

Remember that the radar picture may vary from visual observations that you make; a nearby small object may appear the same size on the screen as a distant large object. However, with experience the approximate size of different objects can be determined by the relative size and brightness of the echoes.

? **More information ....** See the 'Using the Radar' chapter of the Reference Manual.

D6731-2

| VRM/EBL	TARGET TRACKING	GAIN	TARGETS	PRESENTATION

How can the radar help me avoid a collision?

You can set up your E-Series Display to sound an alarm when anything comes within a pre-set range of the boat. These guard zones allow you to take any necessary action to avoid a collision.

Guard zones

A sector or circular zone fixed with respect to the Ships Heading Marker (SHM). If the SHM moves, or the centre is offset, or the range scale changes, the zone moves accordingly.

What does a guard zone displayed?

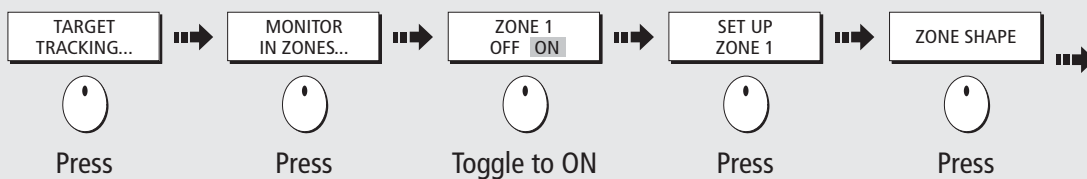SHM
SHM

Sector Zone
Circular Zone
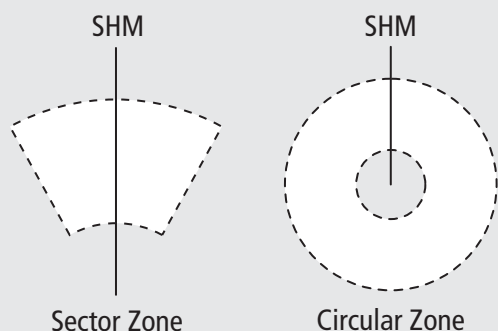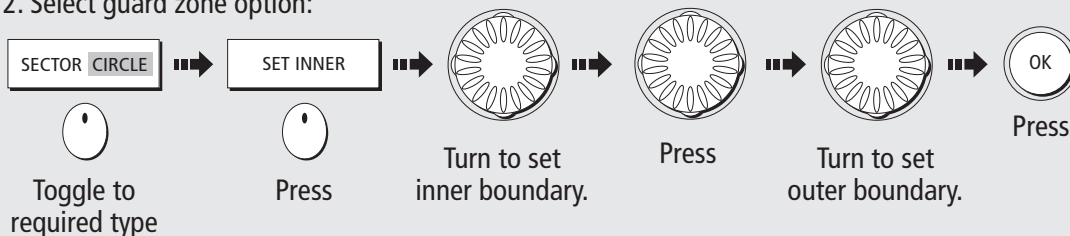
IMPORTANT

A guard zone:

- Will only operate when a whole zone is displayed on the screen, or is displayed by offsetting the centre.
- Is inactive for 10 seconds after it is placed or re-sized, to avoid inappropriate alarms.

How do I set up a circular guard zone?

1. Select guard zone function:

TARGET TRACKING...	MONITOR IN ZONES...	ZONE 1 OFF ON	SET UP ZONE 1	ZONE SHAPE
Press	Press	Toggle to ON	Press	Press

2. Select guard zone option:

SECTOR CIRCLE	SET INNER				OK
Toggle to required type	Press	Turn to set inner boundary.	Press	Turn to set outer boundary.	Press

NOTE: You can also set up a sector guard zone.

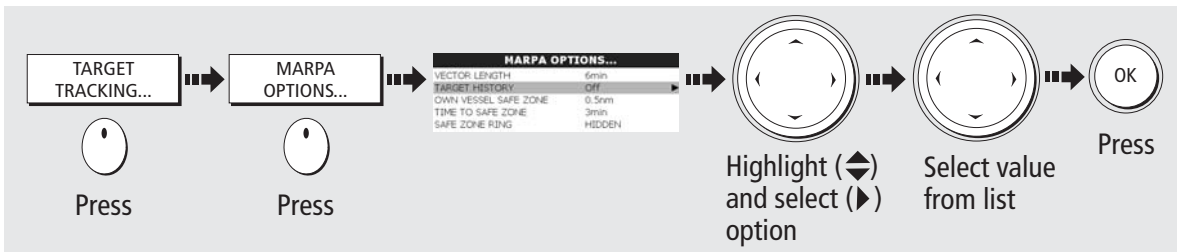**? More information....** See the 'Using the Radar' chapter of the Reference Manual.
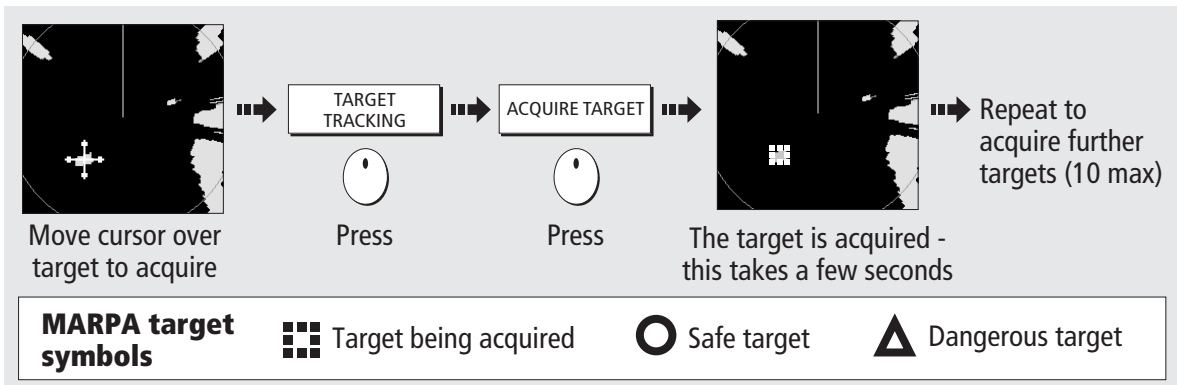
D6732_2

What is MARPA?

Mini Automatic Radar Plotting Aid (MARPA) functions are used for target tracking and risk analysis. MARPA improves your standards of collision avoidance by obtaining detailed information for up to 10 targets, and provides continuous and rapid situation evaluation.

MARPA tracks the selected targets and calculates target bearing, range, true speed, course, Closest Point of Approach (CPA), and Time to Closest Point of Approach (TCPA). Each tracked target can be displayed with a CPA graphic depicting the approximate target speed (vector length) and course (vector direction). Alternately, move the cursor over the target to display the range and CPA. You can now access bearing and speed. Each target is continually assessed. An alarm sounds if a target becomes dangerous or lost. NOTE: For MARPA to operate, fast heading data is required.
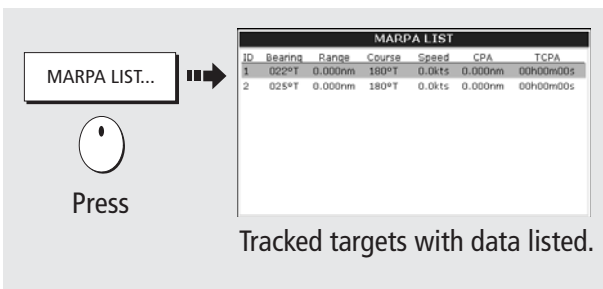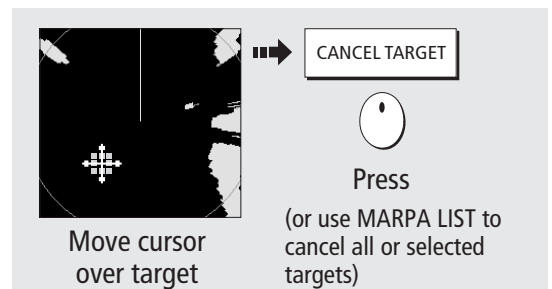
How do I set up the MARPA functions?

| TARGET TRACKING... | ➠ | MARPA OPTIONS... | ➠ | **MARPA OPTIONS...** VECTOR LENGTH 6min / TARGET HISTORY Off / OWN VESSEL SAFE ZONE 0.5nm / TIME TO SAFE ZONE 3min / SAFE ZONE RING HIDDEN | ➠ | | ➠ | | ➠ | OK |

Press   Press   Highlight (⬍) and select (▶) option   Select value from list   Press

How do I acquire a MARPA target?

Move cursor over target to acquire   ➠ | TARGET TRACKING | ➠ | ACQUIRE TARGET | ➠   The target is acquired - this takes a few seconds   ➠   Repeat to acquire further targets (10 max)

Press   Press

| **MARPA target symbols** | ▦ Target being acquired | ⬤ Safe target | △ Dangerous target |

How do I view details of MARPA targets?

| MARPA LIST... | ➠ | **MARPA LIST** |

ID	Bearing	Range	Course	Speed	CPA	TCPA
1	022°T	0.000nm	180°T	0.0kts	0.000nm	00h00m00s
2	025°T	0.000nm	180°T	0.0kts	0.000nm	00h00m00s

Press

Tracked targets with data listed.

How do I cancel MARPA target(s)?

Move cursor over target   ➠ | CANCEL TARGET |

Press

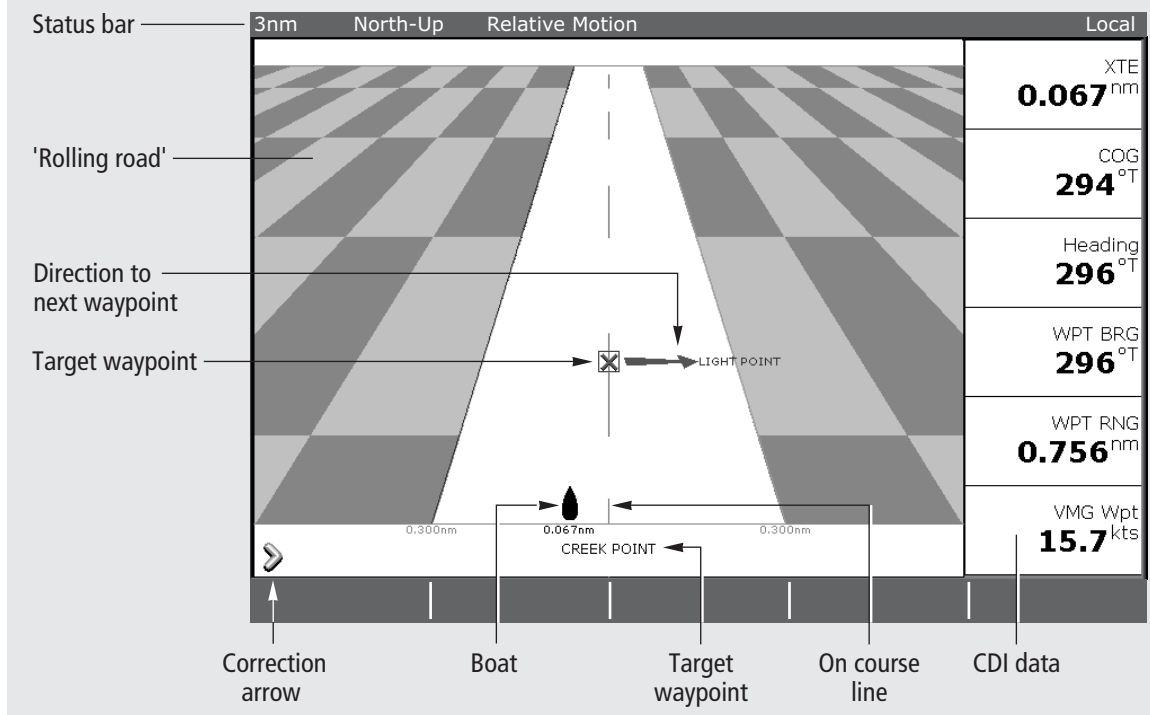(or use MARPA LIST to cancel all or selected targets)

? More information..... See the 'Using the radar' chapter of the Reference Manual.

D6733_2

How do I monitor my course?....

- Your course is shown on the chart application whilst motion mode is active.
- Using COG and heading vectors (Press DATA - CHART VECTORS - COG/HDG VECTORS).
- Use the Course Deviation Indicator (CDI). With your display receiving accurate heading and position information, you can to monitor your course and accurately steer to a target waypoint.
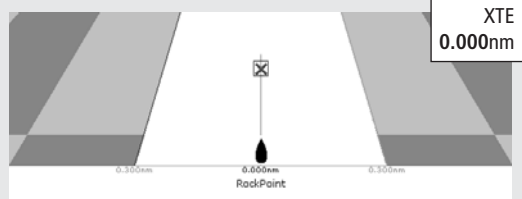
What does the CDI show me?....

The CDI gives a graphical representation of your boat's course. This 'rolling road' format represents a width of sea equal to the Cross Track Error (XTE) limits that you have specified in the Setup menu. As you travel towards the target waypoint, the checkered pattern moves down the screen to simulate movement at a rate proportional to your boat's speed.
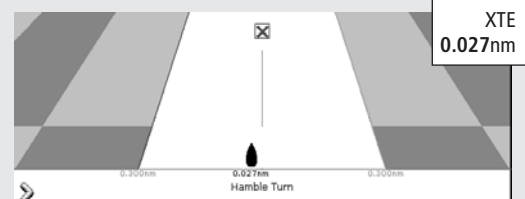
Status bar

'Rolling road'

Direction to next waypoint

Target waypoint

| 3nm | North-Up | Relative Motion | Local |

LIGHT POINT

XTE
0.067^{nm}

COG
$294^{°T}$

Heading
$296^{°T}$

WPT BRG
$296^{°T}$

WPT RNG
0.756^{nm}

VMG Wpt
15.7^{kts}

0.300nm   0.067nm   0.300nm
CREEK POINT

Correction arrow | Boat | Target waypoint | On course line | CDI data

What do the steering instructions tell me?

On course

XTE
0.000nm

0.300nm   0.000nm   0.300nm
RockPoint

- Boat on center line.
- Zero XTE

Off course

XTE
0.027nm

0.300nm   0.027nm   0.300nm
Hamble Turn

- Boat off center line.
- Correction arrow(s) indicate direction to steer to maintain course to target waypoint.
- The greater the XTE, the more arrows.

? More information..... See the 'Using the CDI' chapter of the Reference Manual

D6734_2

What's under the boat?
Understanding the fishfinder
Card No. 13

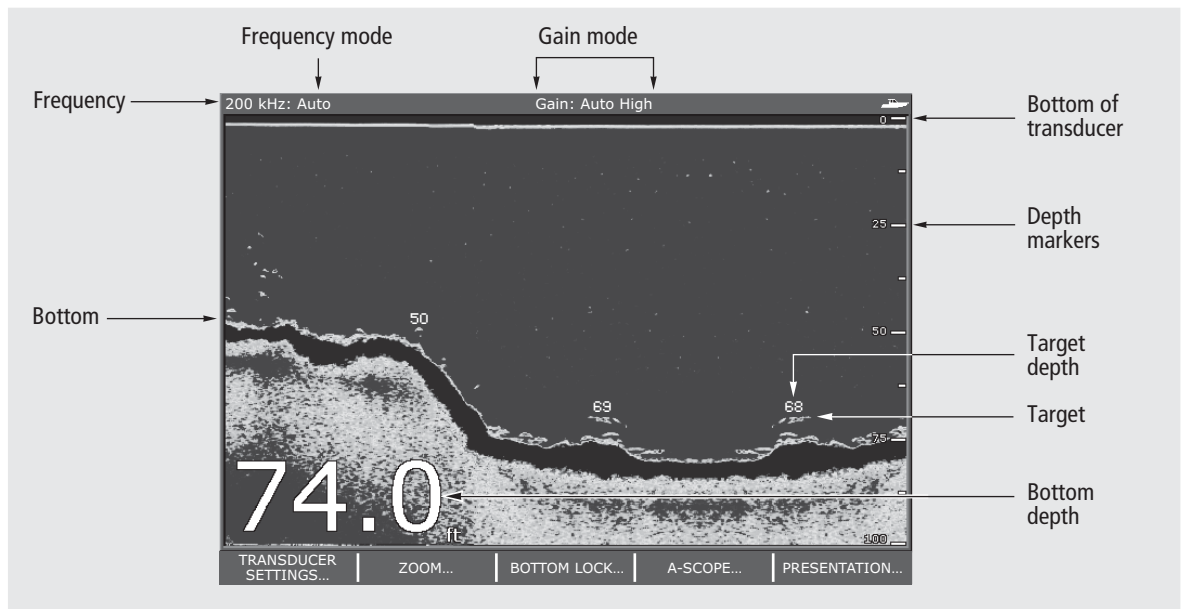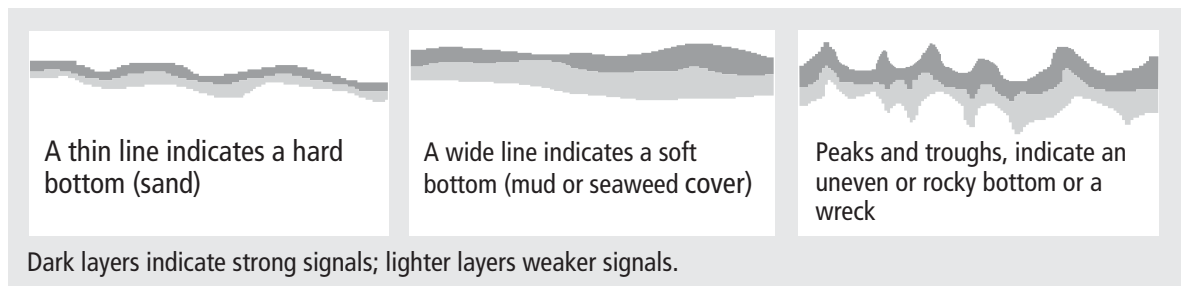| TRANSDUCER SETTINGS	ZOOM	BOTTOM LOCK	A-SCOPE	PRESENTATION

What's under the boat?

The fishfinder application, when connected to a suitable Digital Sounder Module (DSM) and transducer, will help you to see fish, bottom structure and underwater obstructions. The image scrolls from right to left at an automatically selected range and frequency to provide a record of the echoes seen. You can mark with a waypoint any positions of interest that you may wish to return to. These waypoints are added to the waypoint list and can be used by other applications in your E-Series display.

What can I see on the screen?

Frequency mode — 200 kHz: Auto

Gain mode — Gain: Auto High

Frequency

Bottom of transducer

Depth markers

50

69   68

Bottom — 50

Target depth

Target

74.0 ft

Bottom depth

TRANSDUCER SETTINGS...	ZOOM...	BOTTOM LOCK...	A-SCOPE...	PRESENTATION...

How do I interpret the bottom?

A thin line indicates a hard bottom (sand)

A wide line indicates a soft bottom (mud or seaweed cover)

Peaks and troughs, indicate an uneven or rocky bottom or a wreck

Dark layers indicate strong signals; lighter layers weaker signals.

What influences target display?

The shape and size of echoes indicating targets, is influenced by a combination of:

- Boat speed - flatter at slower speeds
- Target depth - larger near the surface
- Transducer frequency - broader at lower levels
- Target size - larger targets return larger echoes

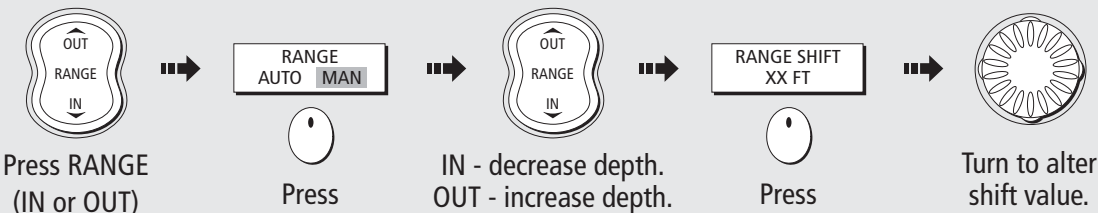? **More information.....** See the 'Using the Fishfinder' chapter of the Reference Manual.

D6735_3

How do I change the range or shift the image?

Your system automatically adjusts the display depth range, selecting the shallowest depth that keeps the bottom on the lower half of the window. You can however, set this manually if required and move the image within the selected page up or down. Using the range controls will affect all fishfinder windows.:
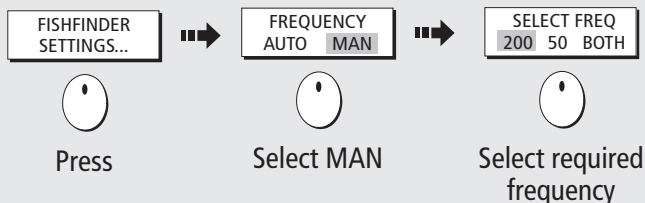
OUT RANGE IN	RANGE AUTO MAN	OUT RANGE IN	RANGE SHIFT XX FT	
Press RANGE (IN or OUT)	Press	IN - decrease depth. OUT - increase depth.	Press	Turn to alter shift value.

How do I change the operating frequency?

Auto mode - automatically selects 50 kHz or 200 kHz. This is the default mode.

Manual (MAN) - Single or dual

- **200 kHz** - maximum definition in shallow water.
- **50 kHz** - maximum depth penetration in deep water
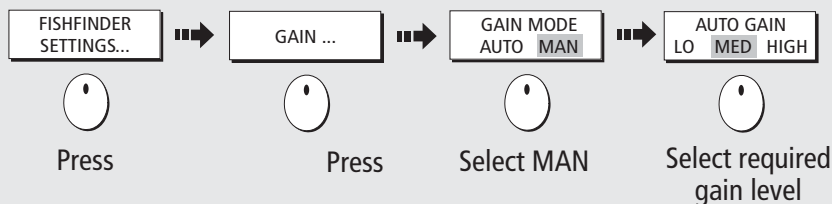- **Both** - 200 kHz & 50 kHz displayed simultaneously.

FISHFINDER SETTINGS...	FREQUENCY AUTO MAN	SELECT FREQ 200 50 BOTH
Press	Select MAN	Select required frequency

How do I change the gain mode?

Auto mode - automatically adjusts control to display sharpest image. This is the default mode.

Manual (MAN)
- **Low** - when cruising
- **Med** - when trolling
- **High** - when fishing

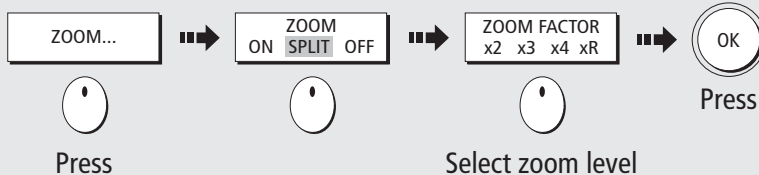| FISHFINDER SETTINGS...	GAIN ...	GAIN MODE AUTO MAN	AUTO GAIN LO MED HIGH
Press	Press	Select MAN	Select required gain level

How do I zoom in on an area of the screen?

To see more detail of the bottom structure, target images etc, zoom in and enlarge a portion of the image.

Zoom
- **On** - zooms image only.
- **Split** - zooms image and standard fishfinder image simultaneously.

ZOOM...	ZOOM ON SPLIT OFF	ZOOM FACTOR x2 x3 x4 xR	OK
Press		Select zoom level	Press

? More information.... See the 'Using the Fishfinder' chapter of the Reference Manual.

D6736_2

● Monitoring data and engines
● Viewing video images

Card No. 15

How do I monitor data?....

NAVIGATION	WAYPOINT	ROUTE	FISHING	SAILING

|			
Ves Pos 25°45'.940N 080°09'.718W	GOTO CURSOR 220°T 1.28nm	TTG --h--m--s	VMG Wpt -.-kt
Depth 78.8ft	Cog Sog 286°T 0.0kt	Heading 293°T	Speed 0.0kt
Set Drift 355°T 0.0kt	XTE 0.00nm Steer >	Trip 0.00nm	Local Time 01:42:12

The **digital data application** enables you to view numeric data generated by the system or by instruments available on NMEA or SeaTalk. This information is displayed in a series of pre-configured panels which contain data relating to a particular function or activity.

Press the appropriate soft key to select the panel of your choice

How do I monitor the engine(s)?....

1 ENGINE	1 ENGINE & FUEL	FUEL RESOURCES	1 ENGINE & RESOURCES	2 ENGINE
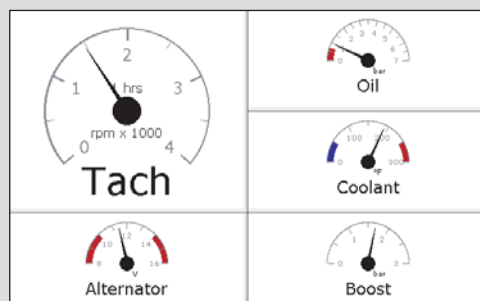
The **engine monitor application** enables you to view data from one or two system compatible engines. The information is displayed in a series of pre-configured panels which contain data relating to engine, fuel and fuel resources.

Press the appropriate soft key to select the panel of your choice.

How do I view video images?....

VIDEO 1	VIDEO 2	VIDEO 3	VIDEO 4	PRESENTATION

The **video application** enables you to view images from a video or DVD player or on-board camera.

Press the appropriate soft key, to select the video input of your choice or set CYCLE VIDEO to ON (via the PRESENTATION key), to cycle through the video inputs.

Note: Video images can only be viewed on the display to which the video source is connected. They cannot be networked to other Displays.

? **More information....**   See the appropriate chapter of the Reference Manual.

D7521_1

Operating a networked E-Series Display

What does a networked system do?

If you have connected two or more E-Series Displays (via either a crossover coupler or SeaTalk High Speed Switch), data can be transferred across the network enabling you to input, view and maintain data across all your Displays irrespective of the Display from which the data originated (excepting Video Input).

How is the network controlled?

The Display that has been installed and nominated as the master, should always be switched on (preferably first). The master display maintains the waypoint, route and track lists as well as data from NMEA and SeaTalk. Each time the master display detects a change on any display e.g. waypoint, route or track added or edited, the data is copied to the database which in turn is copied to all othr Displays that are switched on.

If the system does not detect a master, either because it is not switched on or because a master has not been selected, an alarm will sound and you will be prompted to set a master display.

How do I change the master display?

On the display that you wish to nominate as the master:

1. Press MENU.

2. Highlight and select System Setup

3. Highlight and select System Integration.

4. Highlight and select Data Master.

5. Select ON.

Any such changes that you make to the nominated master will be saved when you power off.

D7524_1

Raymarine

D6826_1