

FURUNO

OPERATOR'S MANUAL

VIDEO PLOTTER

MODEL RP-17



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SAFETY INSTRUCTIONS



CAUTION

No one navigational aid should be relied upon for the safety of vessel and crew. The navigator has the responsibility to check all aids available to confirm position. Electronic aids are not a substitute for basic navigational principles and common sense.

Care and Handling of Charts

Digital charts cannot replace official nautical charts.

Digital charts are intended as an aid to navigation. Position should always be checked against nautical charts, as well as other aids to navigation.

Digital charts cannot replace the radar.

Digital charts can only show own ship's position relative to a chart feature (coastline, lighthouse, etc.). They cannot show other vessels, as does the radar. Digital charts can never replace the radar.

Handle chart/memory cards carefully.

- Keep cards away from heat sources.
- Keep cards away from magnets and magnetic material.
- Replace cards in their protective cases after use.

An excessive amount of marks and lines on the display will greatly reduce the clarity of the radar picture.

Erase unnecessary marks and lines to prevent picture clutter.

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FOREWORD

A Word to RP-17 Owners

Congratulations on your choice of the FURUNO RP-17 Video Plotter. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

For nearly 50 years FURUNO Electric Company has enjoyed an enviable reputation for innovative and dependable marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

Your RP-17 is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless installed, operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.

We would appreciate hearing from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

Features

The Video Plotter RP-17 is an optional circuit board which is accommodated in the display unit of the FR-1500 MARK-3 series radars and the FR-1710/1725/1760DS radar, and provides video plotter functions such as waypoint marking and route creation.

The main features are

- Chart overlay on radar display
- Head-up display for chart card data
- Memory cards for unlimited storage of data
- Memory cards can be used together with chart cards.
- Radar position correction
- Alarms: Arrival, Anchor Watch, Border, XTE (Cross-Track Error)

1. OPERATIONAL OVERVIEW

1.1 Introduction

The Video Plotter RP-17 is an optional circuit board which is accommodated in the display unit of the FR-1500 MARK-3 series radars and the FR-1710/1725/1760DS. It permits use of two memory cards: a memory card(RAM) for storing operator-created radar maps, and the other is a chart card(ROM) storing FURUNO made digital charts.

The memory card enables the operator to create radar maps more precisely than the standard supplied radar map card (150 points per map). The radar map can hold a maximum of 3,000 points. The card permanently retains the data you have entered from the radar display or by Lat/Long positions. Own ship and other ship tracks (Auto Tracking Aid ARP-17 or Auto Plotter ARP-10 required) may be stored at a selected interval. To display Nav lines, RTE and WPL sentences are necessary. WPL ID sentence received in figure only. The data can be copied for other ships of the same shipping company.

Charts are superimposed on the radar picture without disturbing the radar observation. The chart area is dependent on the radar range in use.

1.2 Controls Used By the Video Plotter

FR-1500 MARK-3 Series

MODE: Selects presentation mode.

SHIFT/ZOOM: Offcenters the display (touch-and-release action); zoom feature (long press).

MARK: Inscribes mark.

MENU: Opens/closes the menu.

CANCEL/CLEAR: Clears entire line of data; erases marks.

ENTER/SELECT: Registers data.

HL OFF: Temporarily erase the RP screen.

FR-1710/1725/1760DS

MODE: Selects presentation mode.

SHIFT: Offcenters the display.

ZOOM: Zoom feature.

MARK: Inscribes mark.

MENU: Opens/closes the menu.

CANCEL/CLEAR: Clears entire line of data; erases marks.

ENTER/SELECT: Registers data.

HL OFF: Temporarily erase the RP screen.

1.3 Selecting Displays

The RP-17 has three displays: Radar, Video Plotter, and Radar/Video Plotter (Combination). Displays may be selected on the menu, the keying sequence of which is shown in the figure below.

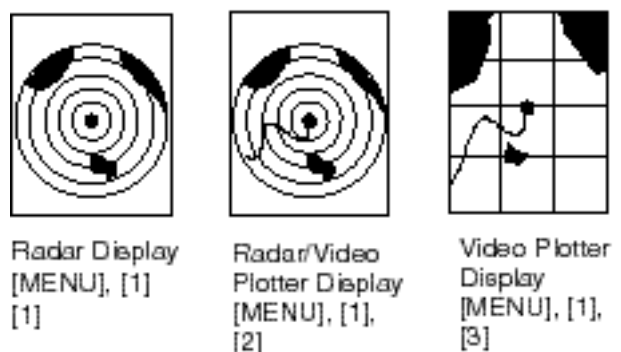


Figure 1-1 Displays

Note: The radar/video plotter display requires heading signal. When the heading signal fails, the radar display is automatically selected.

1.4 Selecting Presentation Mode

Five presentation modes are available by the [MODE] key: head-up, head-up true bearing, course-up, north-up, and true-motion. (North-up, head-up true bearing, course-up and true motion require a heading signal. TM mode additionally requires a speed signal.) Each time the key is pressed, if heading is input to the radar, the display and the display mode indication at the top left corner of the display change in the sequence of HU, HU TB, CU, NU and TM. If there is no heading signal input, the display mode is always HU.

1.5 Shifting the Display

Shifting by the trackball

The display can be shifted by the trackball up to 75% of the range in use in any direction. Operate the trackball to shift the display, and the display shifts in the direction the trackball is operated. When the cursor reaches an edge of the display, the pictures shifts in the opposite direction.

When the own ship is at a location which is 75% or more of the effective range of the display in the radar or radar/video plotter display, the radar switches to the video plotter display, and the course-up mode if the presentation mode is head-up. And when own ship position is returned to a location which is less than 75% of the effective range the previous display mode is restored.

Offcenter

Own ship position, or sweep origin, can be displaced to expand the view field without switching to a larger range scale. The sweep origin can be offcentered to a point specified by the cursor, up to 75% (50% in the true motion mode) of the range in use in any direction.

This feature is not available on the 72 nm range or higher.

To offcenter the radar picture:

1. Place the cursor at a position where you wish to move the sweep origin by operating the trackball.
2. Press the [SHIFT/ZOOM] key ([SHIFT] key in case of the FR-1710/1725/1760DS) with a touch-and-release action. Then, the sweep origin is offcentered to the cursor position. However, the heading line is left in the same position.
3. To cancel offcentering, press the [SHIFT/ZOOM] key ([SHIFT] key in case of the FR-1710/1725/1760DS) again.

Zoom

Zoom enlarges an area of interest as large as twice the normal viewing. This feature is available on the R-type radar only.

1. Place the cursor (+) close to the point of interest by operating the trackball.
2. Press and hold down the [SHIFT/ZOOM] key ([ZOOM] key in case of the FR-1710/1725/1760DS) for about two seconds. The area around the cursor and own ship is enlarged twice as large as the original size.
4. To cancel zoom, press and hold down the [SHIFT/ZOOM] key ([ZOOM] key in case of the FR-1710/1725/1760DS) about two seconds.

Note: The zoom feature is inoperative when the display is off centered.

1.6 Selecting Chart Scale

The chart scale can be selected with the [RANGE+] and [RANGE-] key. A larger range shrinks the picture; a smaller one enlarges it.

2. CHART CARDS

⚠ WARNING

Chart cards are intended as an aid to navigation. The navigator has the responsibility to check all aids available to confirm position.

⚠ CAUTION

Handle chart cards and memory cards with care.

- Keep cards away from direct sunlight, heat sources, and active gases.
- Keep cards away from water and chemicals.
- Keep the connector free of foreign material.
- Do not drop the cards.

2.1 Displaying Charts

Inserting chart cards

1. Open the card slot cover at the left hand side of the display. Insert a chart card label side left, arrow forward in the left side card slot.

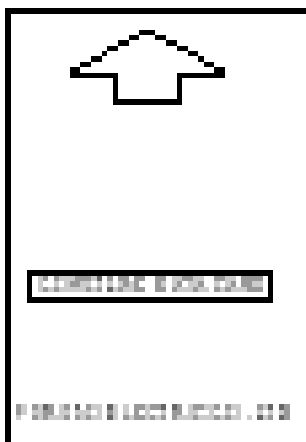


Figure 2-1 chart card

2. Close the card slot cover.

3. Press the [+] or [-] key to display the chart.

Note 1: Chart cards may be inserted in the left or right slot, and the slot to use for chart cards is chosen on the menu.

Note 2: Chart may be automatically displayed by inserting a chart card in the slot before turning on the radar.

Chart icons

Chart icons are displayed to alert you to chart status.



Chart properly displayed.



Chart overenlarged.



Chart overenlarged or wrong chart.

Figure 2-1 Chart icons

Ejecting chart cards

Chart cards may be ejected with the radar turned on or off.

1. Press the EJECT button on the card slot.
2. Remove the chart card.

2.2 Showing/Hiding Chart Features

Chart features may be turned on/off as follows:

1. Press the [MENU] key to display the main menu.
2. Press the [1] key twice to select Video Plot.
3. Press the [9] key twice to select Coastline/Mark Disp.

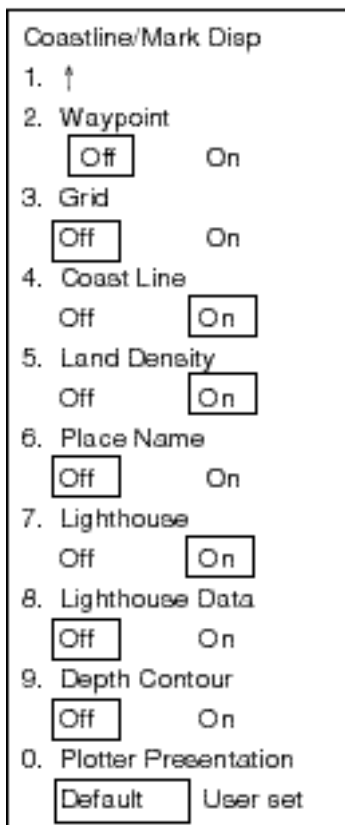


Figure 2-2 Coastline/Mark Disp menu

4. Press appropriate numeric key to select both item and option.

Waypoint: Turns waypoint display on/off.

Grid: Turns grid on/off.

Coastline: Turns coastline on/off.

Land Density: Fills in (On) or hollows (Off) land.

Place Name: Turns geographic names on/off.

Lighthouse: Turns lighthouse icons on/off.

Lighthouse Data: Turns lighthouse viewing angle on/off. Viewing angle is shown as an arc extending from lighthouse position. Arc color, white or green, is the color of the lighthouse's beam. This feature is available on selected charts.

Depth Contour: Turns depth contour lines on/off.

Plotter Presentation: Selects plotter screen settings; default or user setting. Default settings are as below.

Item	Setting
Radar colors, brilliance and background	
Background color	Black
Echo color	Yellow
Color of chart elements	
Land	green
Grid	green
Marks	green
Contour	green
Chart information	
Waypoints	ON
Grid	OFF
Coastline	ON
Land density	ON
Place name	OFF
Lighthouse	ON
Lighthouse data	ON
Depth contour	OFF
Target track	OFF
OS track	OFF
Marks	OFF

5. Press the [ENTER/SELECT] key to register your selection.
6. Press the [MENU] key to escape.

2.3 Position, Bearing Correction

Position correction

There may be some instances where the chart is not overlaid on the radar picture correctly. You can compensate for this error by applying an offset to chart position.

1. Press the [MENU] key to open the main menu.
2. Press the [8] key twice to select Mark.
3. Press the [5] key twice to select Position Correction.

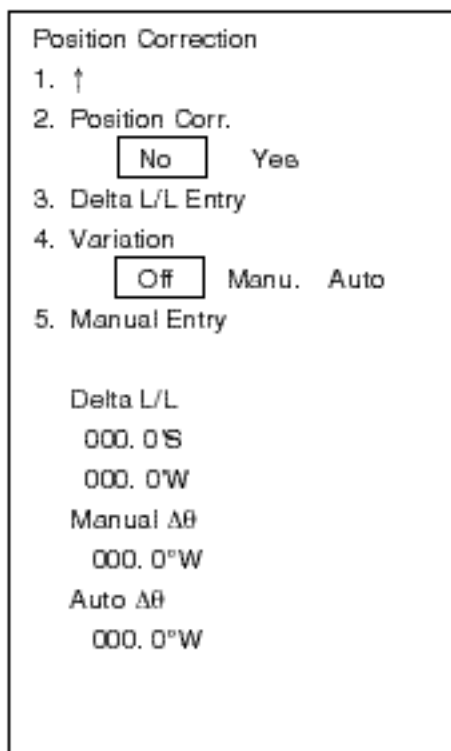
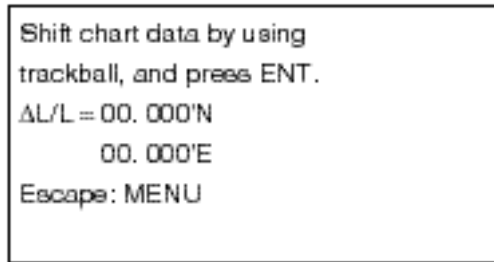



Figure 2-3 Position Correction menu

Note: “Variation” and correction values only appear with connection of a magnetic compass.

4. Press the [2] key to select Yes, and press the [ENTER/SELECT] key.
5. Press the [3] key to select Delta L/L Entry, and press the [ENTER/SELECT] key. The menu disappears and the following message appears:



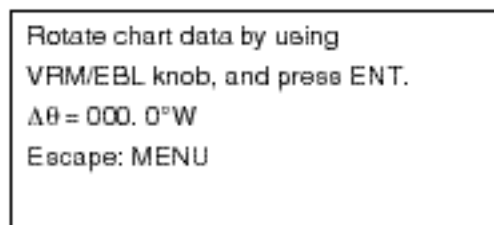
6. As the prompt says, use the trackball to shift chart data.
7. Press the [ENTER/SELECT] key. Control is returned to the Position Correction menu.
8. Press the [MENU] key to close the menu. The offset icon () appears at the bottom of the display.

To remove the offset select No at step 4 in the above procedure.

Bearing correction

In some cases radar bearing may not match chart bearing. This can be corrected by offsetting bearing, automatically or manually. This feature is useful when no coastline is displayed; that is, vessel is in mid ocean. A magnetic compass is required.

1. Press [MENU], [8], [8], [5], [5] to display the Position Correction menu.
2. Press the [4] key to select Manu., and press the [ENTER/SELECT] key.
3. Press the [5] key to select Manual Entry, and press the [ENTER/SELECT] key. The menu disappears and the following dialog appears:



4. As the screen says, use the EBL or VRM knob to rotate chart data.

5. Press the [ENTER/SELECT] key. Control is returned to the Position Correction menu.
6. Press the [MENU] key to close the menu. The offset icon (⊕) appears at the bottom of the display.

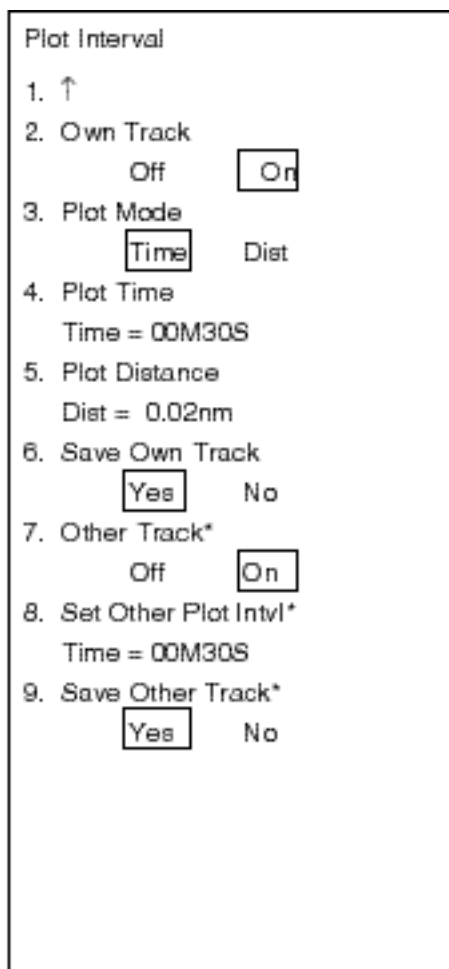
To remove the bearing offset, select Off at step 2 in the above procedure.

3. TRACK

3.1 Displaying Own Ship's Track

Own ship's track may be displayed as follows:

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [7] key twice to select Plot Interval.



*: Requires Auto Tracking Aid ARP-17 or Auto Plotter ARP-10.


Figure 3-1 Plot Interval menu

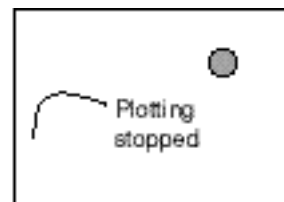
4. Press the [2] key to select On from the Own Track field.
5. Press the [ENTER/SELECT] key to register your selection and the [MENU] key to close the menu.

3.2 Stopping Plotting of Own Ship's Track

When your ship is at anchor or returning to port you probably will not need to plot (record) the track. You can stop plotting the track, to conserve the track memory, by actuating the "HOLD" function. The track is neither plotted nor saved, thereby conserving the track memory.

Stopping track plotting

1. Press [MENU], [1], [1], [7], [7] to display the Plot Interval menu.
2. Press the [6] key to select No from the Save Own Track field.
3. Press the [ENTER/SELECT] key. The HOLD icon () appears at the bottom of the screen. (Video Plotter display only.)



(a) Plotting stopped; track is not plotted



(b) Track is again plotted when plotting is resumed.

Figure 3-2 Track plotting stopped, track plotting resumed

4. Press the [MENU] key to finish.

To resume plotting, select Yes at step 2 in the above procedure.

3.3 Changing Own Ship's Plot Interval

The plot interval determines both how the track will be reconstructed on the display and the track storage time.

How the track is drawn

The “quality” of the track displayed largely depends on the plot interval setting, smoothing rate, etc.

In drawing the track, first the ship's position fed from the navigation aid is stored into the radar's memory at an interval of time or distance selected by the operator. This interval of time or distance is called the “Plot Interval” and it is selected considering the ship's speed, the chart scale, etc. If a shorter interval is selected, a reconstructed course line is provided with better accuracy, but total storage time of the track is reduced.

Obviously there is a trade off between smooth reconstruction of the track and plot storage time: The shorter the interval the smoother the reconstruction but storage time is reduced. The following figure compares plot interval and track reconstruction.

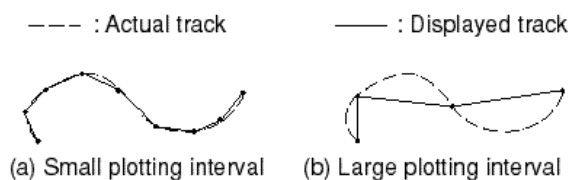


Figure 3-3 Plotting interval and how track is plotted

Plot interval by time or distance

The plot interval can be selected by “Time” or “Distance”. “Distance” is useful when the ship is anchored, since track is not plotted while the vessel is stationary.

Setting plot interval

1. Press [MENU], [1], [1], [7], [7] to display the Plot Interval menu.
2. Press the [3] key to select Time or Dist from the Plot Mode field.
3. Press the [ENTER/SELECT] key.
4. Press the [4] key if you selected Time at step 2; [5] key if you selected Dist.
5. Key in plotting interval with the numeric keys.
6. Press the [ENTER/SELECT] key to register your selection and the [MENU] key to close the menu.

Note: You can set other ships' plot interval with 7. Set Other Plot Interval on the Plot Interval menu.

3.4 Displaying Other Ship's Tracks

Other ships' tracks may be displayed when the Auto Tracking Aid ARP-17 or ARP-10 is interfaced with the radar. The tracks of up to 10 ships may be displayed.

The plotting interval for other ships tracks can be set independently of that for own ship. Also, plotting of other ships tracks may be suspended to conserve track memory.

1. Press [MENU], [1], [1], [7], [7] to display the Plot Interval menu.
2. Press the [7] key twice to select On from the Other Track field.
3. Press the [8] key to select Set Other Plot Intvl and key in plotting interval with the numeric keys.
4. Press the [ENTER/SELECT] key followed by the [MENU] key.

3.5 Erasing Own Ship's Track, Other Ship's Track

Unnecessary tracks may be erased as follows:

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [3] key twice to display the Delete Memory menu.

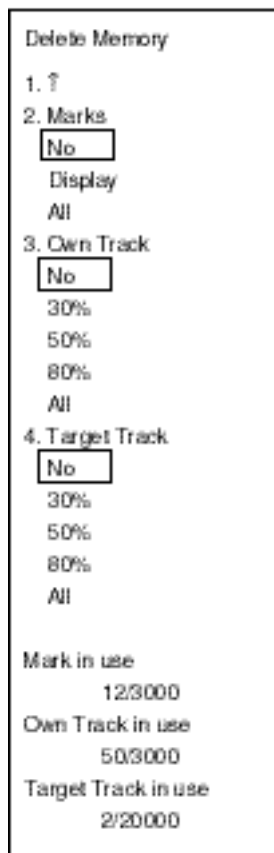


Figure 3-4 Delete Memory menu
(FR-1710/1725/1760DS)

6. Press the [3] key (Own Track) or [4] key (Target Track) to select amount of track to erase. For example, 30% erases 30% of the track points stored in the track memory.
7. Press the [ENTER/SELECT] key followed by the [MENU] key.

4. MARKS, LINES

4.1 Entering Marks, Lines

You can inscribe marks and lines on the display to denote important locations such as fishing spots, buoys, islands, etc.

Entering marks on the radar display

Selection of mark entry method

Marks may be entered on the radar display by cursor, latitude and longitude position and own ship's position.

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.

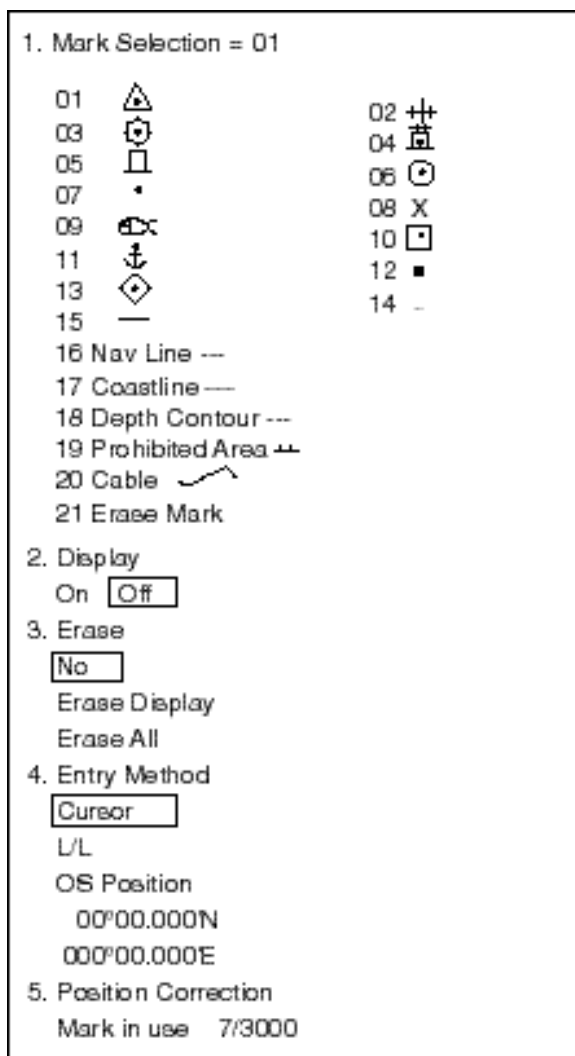


Figure 4-1 Mark menu, radar mode

3. Press the [1] key to select Mark Selection. Use the numeric keys to enter mark or line number desired.
4. Press the [ENTER/SELECT] key.
5. Press the [4] key to select mark/line entry method desired; cursor, L/L, or own ship position.
6. Press the [ENTER/SELECT] key. Follow “Entering marks by cursor,” “Entering marks by latitude and longitude position,” or “Entering marks at own ship’s position” or “Entering marks by cursor”.

Entering marks by cursor

1. Select Cursor at step 5 in “Selection of mark entry method.”
2. Place cursor on location where to inscribe a mark.
3. Press the [MARK] key.
4. To enter a line, repeat steps 2 and 3.

Note: To inscribe another line, press the [1] key, key in line number (type) shown on the Mark menu, press the [ENTER/SELECT] key, and the repeat steps 2 and 3. To inscribe more than two of the same type of line, after completing a line, press [1] [2] [1] to select Erase Mark, press the [ENTER/SELECT] key and then press [1] to select line type.

Entering marks by latitude and longitude position

1. Select L/L at step 5 in “Selection of mark entry method.”
2. Key in latitude and press the [ENTER/SELECT] key.
3. Key in longitude and press the [ENTER/SELECT] key.
4. Press the [MENU] key.

Entering marks at own ship's position

1. Select OS Position at step 5 in "Selection of mark entry method."
2. Press the [MARK] key. A mark is placed at own ship's position.

Entering marks on the radar/video plotter, video plotter displays

Marks can be entered on the radar/video plotter and video plotter displays by cursor or at own ship's position.

Selection of mark

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.

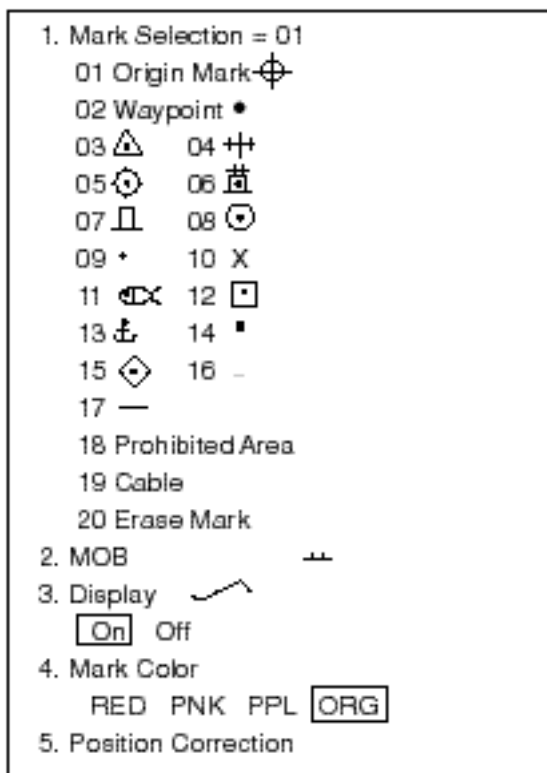


Figure 4-2 Mark menu, video plotter mode

3. Press the [1] key to select Mark Selection. Use the numeric keys to enter mark or line number desired.
4. Press the [ENTER/SELECT] key.

Note: To inscribe another line, press the [1] key, key in line number (type) shown on the Mark menu, press the [ENTER/SELECT] key, and the repeat steps 2 and 3. To inscribe more than two of the same type of line, after completing a line, press [1] [2] [1] to select Erase Mark, press the [ENTER/SELECT] key and then press [1] to select line type.

Entering marks by cursor

1. Select mark desired as described in "Selection of mark."
2. Place cursor on location where to inscribe a mark.
3. Press the [MARK] key. To inscribe two or more separate lines do the following:
 - a) On the MARK menu, press the [1] key to select Mark Selection.
 - b) Key in [2], [1] (Mark Erase).
 - c) Press the [ENTER/SELECT] key.
 - d) Press the [1] key again, enter line number desired and press the [ENTER/SELECT] key.
 - e) Repeat steps 2 and 3 in this procedure to complete the line.

Entering marks at own ship's position

1. Enter [0], [2] at step 3 in "Selection of mark."
2. Press the [MARK] key.

4.2 Turning Marks On/Off

Marks can be globally turned on or off as below. Note that the origin mark is displayed regardless of setting.

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.
3. Press the [2] key to select Display.
4. Press the [2] key again to select On or Off.
5. Press the [ENTER/SELECT] key.

4.3 Erasing Marks, Lines

Erasing individual marks and lines

1. For mark, place the cursor on mark to erase. For line place the cursor on the point to erase.
2. Press the [CANCEL/CLEAR] key.

If the mark is not erased it may be superimposed on several marks. In this case, press the [CANCEL/CLEAR] key several times. To erase an entire line, all its points must be erased.

Individual origin marks and EPA plotting symbols are also erased in the same manner as marks and lines. For this reason you may wish to erase only marks or lines when they are superimposed on origin marks or plotting symbols. This can be done as follows:

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.
3. Press the [1] key.
4. For the radar display, key in [2], [1] to select "21. Mark Erase". For the radar/plotter or plotter display, press [2], [3] to select "23. Mark Erase".
5. Press the [ENTER/SELECT] key.
6. Place cursor on mark or line point to erase.

7. Press the [MARK] key.
8. Press the [MENU] key to close the menu.

Erasing marks on the radar display

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.
3. Press the [3] key to select method of erasure:

Erase Display: Erase all marks and lines currently displayed.

Erase All: Erase all marks and lines including those stored in the memory (including currently displayed marks).

4. Press the [ENTER/SELECT] key.
5. Press the [ENTER/SELECT] key again to erase.
6. Press the [MENU] key to close the menu.

Erasing marks and lines on the radar/video plotter, video plotter displays

Marks can be erased on the radar/video plotter and video plotter displays individually or collectively.

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [3] key twice to select Delete Memory.
5. Press the [2] key to select mark erasure method; Display or All.
6. Press the [ENTER/SELECT] key.
7. Press the [ENTER/SELECT] key again to erase.
8. Press the [MENU] key to close the menu.

4.4 Entering the MOB Mark

The MOB (Man OverBoard) mark denotes position of man overboard. This mark can only be inscribed on the radar/video plotter and video plotter displays.

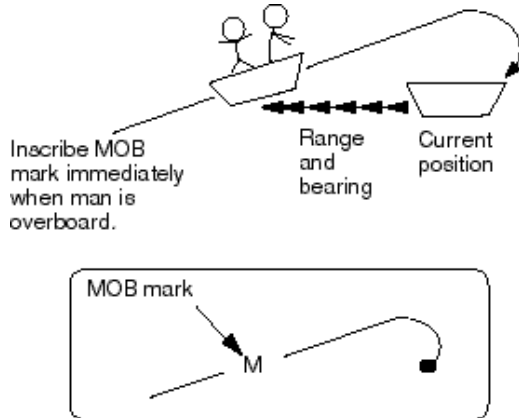


Figure 4-3 MOB concept

1. Press the [MENU] key.
2. Press the [8] key twice.
3. Press the [2] key to select 2. MOB. The MOB mark ("M") is inscribed at own ship's position the moment the key is pressed.
4. Press the [MENU] key to close the menu.

A MOB mark can be erased by placing the cursor on it and pressing the [CANCEL/CLEAR] key.

4.5 Entering the Origin Mark

The origin mark (\oplus) is mainly used to find the range and bearing between two targets on the radar/plotter and plotter displays.

1. Press the [MENU] key.
2. Press the [8] key twice to display the Mark menu.
3. Press the [1] key to select Mark Selection.
4. Enter [0], [1] to select Origin Mark \oplus .
5. Press the [ENTER/SELECT] key.
6. Place the cursor on target and press the [MARK] key.
7. Place the cursor on the other target.
8. Press the [MENU] key to close the menu.

Check cursor position display to find range and bearing from the origin mark entered.

To erase the origin mark, repeat step 6 above again.

4.6 Mark Color

Mark color can be selected as below. Note that the color of the origin mark (white) cannot be changed.

1. With the video plotter mode selected, press [MENU], [8], [8].
2. Press the [4] key to select mark color desired.
3. Press the [ENTER/SELECT] key to register your selection.

5. WAYPOINTS, ROUTES

In navigation terminology, a particular location is known as a “waypoint,” whether it be a starting point, a destination point or an intermediate point on a voyage.

5.1 Displaying Waypoints

1. Press the [MENU] key.
2. Press the [1] key twice to display the Video Plot menu.
3. Press the [9] key twice to select Coastline/Mark Disp menu.
4. Press the [2] key to select On.
5. Press the [ENTER/SELECT] key followed by the [MENU] key.

5.2 Entering Waypoints

Waypoints may be entered on the video plotter, radar/video plotter display, by the cursor, at own ship’s position, and through the waypoint list (manual entry of latitude and longitude position). You can store 98 waypoints, numbered 01-98. Waypoints 00 and 99 are special waypoints. Waypoint 00 marks own ship’s position when destination is selected and waypoint 99 is for waypoint entered at the navigator (GPS, etc.)

Entering waypoints at own ship’s position

1. Press the [MENU] key.
2. Press the [1] key twice to display the Video Plot menu.
3. Press the [4] key twice to select Waypoint.

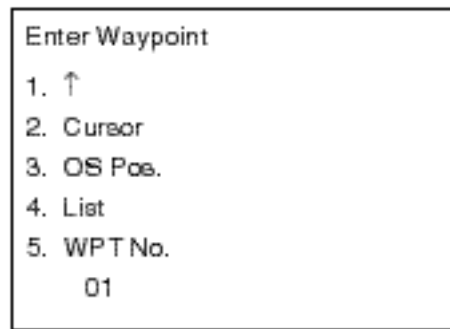


Figure 5-1 Waypoint menu

4. If you want to register the waypoint under a number different from what is shown below “WPT No.,” press the [5] key. Key in waypoint number in two digits. (If you enter a number which already exists, “in use” appears.) If you do not care to change the waypoint number, go to step 6; the waypoint will be registered under the number shown below WPT No. Note that waypoint 00 or 99 cannot be entered—these are reserved for own ship position and external waypoint.
5. Press the [ENTER/SELECT] key.
6. Press the [3] key twice to select OS Pos, and a waypoint mark with waypoint number inside is inscribed at own ship’s position. If you entered a waypoint number which already exists, “in use” appears. In this case you may enter a different number after pressing the [CANCEL/CLEAR] key, or write over the number by pressing the [ENTER/SELECT] key at step 5.
7. Press the [MENU] key to finish.

If there is no empty waypoint, a beep sounds and no waypoint can be entered. In this case erase unnecessary waypoints.

Entering waypoints by the cursor

1. Press [MENU], [1], [1], [4], [4].
2. If you want to register the waypoint under a number different from what is shown below "WPT No.," press the [5] key. Key in waypoint number in two digits. If you do not care to change the waypoint number, go to step 4; the waypoint will be registered under the number shown below WPT No.
3. Press the [ENTER/SELECT] key.
4. Place the cursor on the location desired for a waypoint.
5. Press the [2] key twice to select Cursor, and a waypoint mark with waypoint number inside is inscribed at the cursor location.
6. Press the [ENTER/SELECT] key to register your selection.
7. Press the [MENU] key to finish.

Entering waypoints by manual entry of latitude and longitude

1. Press [MENU], [1], [1], [4], [4].
2. Press the [4] key twice to select List.

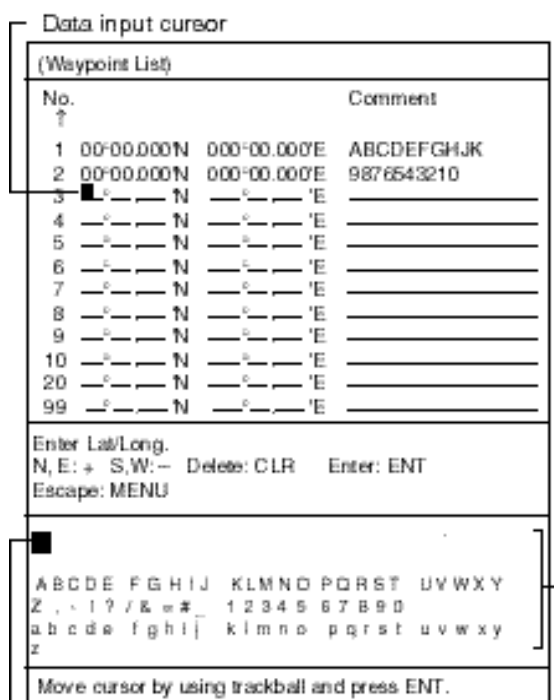


Figure 5-2 Waypoint list

3. Operate the trackball to place the cursor on an empty waypoint. You can scroll the list by placing the cursor at the bottom of the page.
4. Key in latitude with numeric keys. (You can switch from North to South and vice versa with the [-] key. An entire line of data can be cleared with the [CANCEL/CLEAR] key.)
5. Key in longitude with numeric keys. (You can switch from East to West and vice versa with the [+] key.)
6. Confirm that the cursor is located in the Comments column. Enter a comment as follows:
 - a) Select alphanumeric character with the cursor. (Numerics can be directly entered with the numeric keys. A wrong character can be erased with the [CANCEL/CLEAR] key.)
 - b) Press the [ENTER/SELECT] key.
 - c) Repeat b) and c) to complete the comment.
 - d) Select OK.
 - e) Press the [ENTER/SELECT] key.
7. Press the [ENTER/SELECT] key.
8. Press the [MENU] key to finish.

Waypoint number is marked on the screen.

5.3 Deleting Waypoints

Deleting waypoints by the cursor

1. Operate the trackball to place the cursor on the waypoint you want to delete.
2. Press the [CANCEL/CLEAR] key.

Deleting waypoints through the waypoint list

1. Press [MENU], [1], [1], [4], [4].
2. Press the [4] key twice to select List.
3. Use the trackball to select the waypoint to erase.

4. Press the [CANCEL/CLEAR] key to delete waypoint.
5. Press the [ENTER/SELECT] key followed by the [MENU] key to finish.

5.4 Creating Routes

In many cases a trip from one place to another involves several course changes, requiring a series of route points (waypoints) which you navigate to, one after another.

The sequence of waypoints leading to the ultimate destination is called a **route**. The RP-17 can automatically advance to the next waypoint on a route, so you do not have to change the destination waypoint repeatedly. The figure below shows an example of a route between two ports, involving six waypoints.

You can store up to 10 routes. A route may contain up to 30 waypoints.

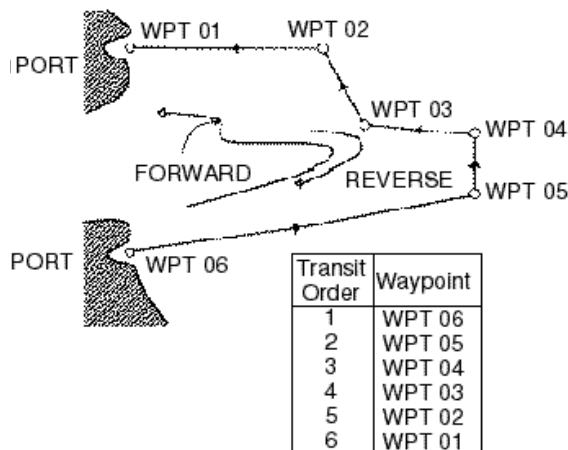


Figure 5-3 Sample route

Creating routes by the cursor

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [5] key twice to select Route.

Route					
1. Mode =	<input type="text" value="Cursor"/>	WPT No.	List		
2. Speed for TTG =	10.0k				
(Route List)					
No.	Disp	Pts	Total	TTG	
▶ 1	YES	30	1234.56 nm	12345.6H	In use
2	YES	5	2345.67 nm	12345.6H	
3	YES	0	*999.99 nm	*9999.9H	
4	YES				
8	YES				
9	YES				
10	YES	0	0.00 nm	___H	
Select mode and route no. by using trackball.					
Display: + Not display: -					
Enter: ENT					
Delete: CLR					

Figure 5-4 Route menu

4. Press the [1] key to select Cursor, and press the [ENTER/SELECT] key.
5. Press the [2] key to select Speed for TTG.
6. Key in ship's speed with the numeric keys. (This allows for automatic calculation of time-to-go to waypoints.)
7. Press the [ENTER/SELECT] key.
8. Select route number with the trackball.
9. Press the [ENTER/SELECT] key.
10. As the screen prompts, place the cursor on point for the route.
11. Press the [+] key. (To clear just-selected point, press the [-] key.)
12. Repeat step 10 and 11 to complete the route.
13. Press the [ENTER/SELECT] key to register the route and the [MENU] key to close the menu.

Creating routes with waypoints

1. Press [MENU], [1], [1], [5], [5] to display the Route menu.
2. Press the [1] key to select WPT no., and press the [ENTER/SELECT] key.
3. Press the [2] key to select Speed for TTG.

4. Key in ship's speed with the numeric keys. (This allows for automatic calculation of time-to-go to waypoints.)
5. Press the [ENTER/SELECT] key.
6. Select route number with the trackball.
7. Press the [ENTER/SELECT] key. The screen for selection of waypoint number appears.

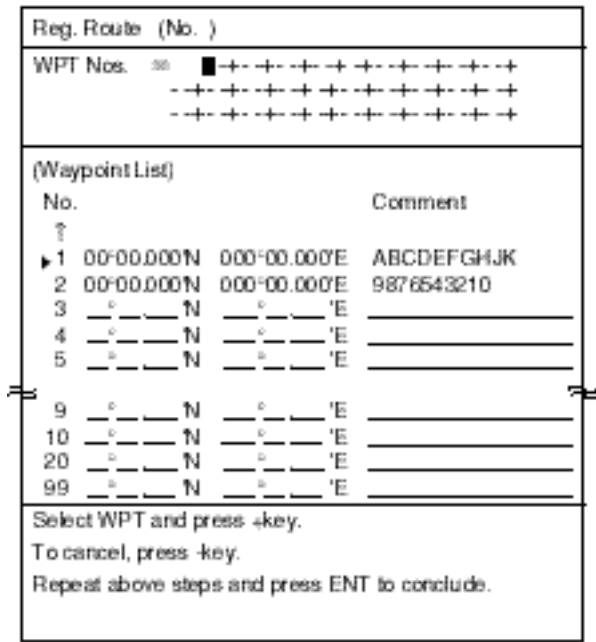


Figure 5-5 Screen for entering route by waypoints

8. Select waypoint number with the cursor and press the [+] key. (You may also enter waypoint number with the numeric keys in which case omit the pressing of the [+] key.)
9. Repeat step 8 to complete the route.
10. Press the [ENTER/SELECT] key.
11. Press the [MENU] key to finish.

Creating routes through the route list

1. Press [MENU], [1], [1], [5], [5] to display the Route menu.
2. Press the [1] key to select List, and press the [ENTER/SELECT] key.
3. Press the [2] key to select Speed for TTG.
4. Key in ship's speed with the numeric keys. (This allows for automatic calculation of time-to-go to waypoints.)
5. Press the [ENTER/SELECT] key.
6. Select route number with the trackball.
7. Press the [ENTER/SELECT] key. The screen for selection of route points appears.

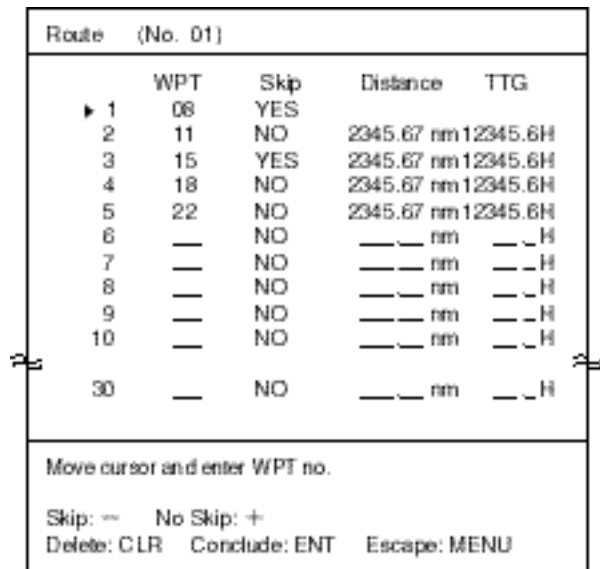


Figure 5-6 Screen for making route

8. Locate the cursor where you want to enter a route point.
9. Key in waypoint number. (The buzzer sounds if you enter a waypoint which has not been registered.)
10. Press the [ENTER/SELECT] key.
11. Repeat steps 8-10 to complete the route.
12. Press the [MENU] key to finish.

5.5 Deleting Route Waypoints

1. Press [MENU], [1], [1], [5], [5] to display the Route menu.
2. Press the [1] key twice to select List.
3. Press the [ENTER/SELECT] key.
4. Select route number.
5. Press the [ENTER/SELECT] key.
6. Select route waypoint to delete.
7. Press the [CANCEL/CLEAR] key.
8. Press the [ENTER/SELECT] key. The route data changes to reflect deletion.
9. Press the [MENU] key to finish.

5.6 Deleting Routes

1. Press [MENU], [1], [1], [5], [5] to display the Route menu.
2. Select route number with the trackball.
3. Press the [CANCEL/CLEAR] key.
4. Press the [ENTER/SELECT] key to delete the route.
5. Press the [MENU] key to finish.

6. NAVIGATION

This section covers navigation. You can navigate by waypoint, cursor-selected point and route.

6.1 Navigation

Navigating to a waypoint

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [6] key twice to select Destination Set.

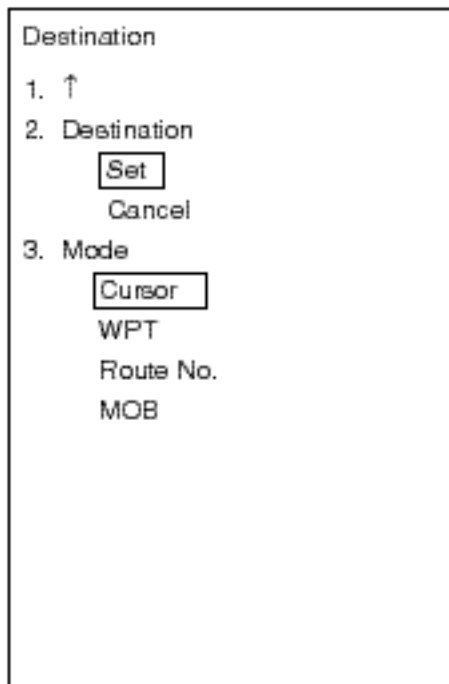


Figure 6-1 Destination set menu

4. Press the [3] key to select WPT.
5. Press the [ENTER/SELECT] key.

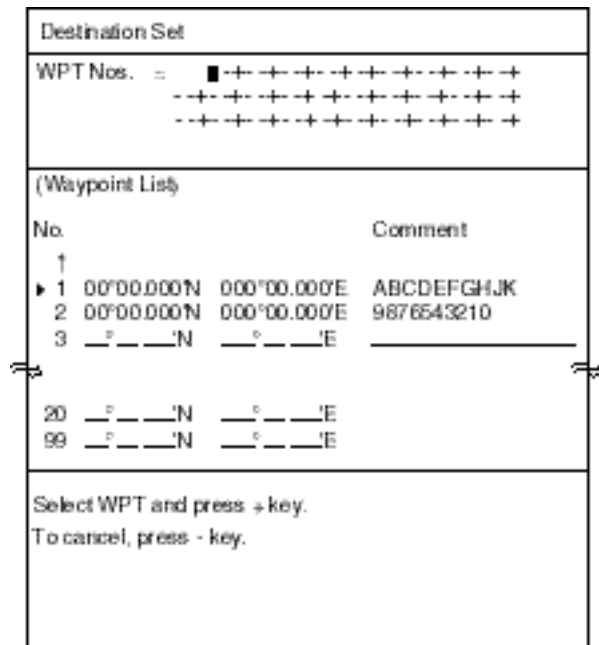


Figure 6-2 Screen for entry of destination waypoints

6. Use the trackball to select waypoints. (Waypoints may also be entered with the numeric keys, in which case omit step 7. If an unregistered waypoint number is entered the buzzer sounds to alert you.)
7. Press the [+] key to set waypoint. The [-] key can be used to cancel an entry.
8. Repeat steps 6 and 7 to complete.
9. Press the [ENTER/SELECT] key. Current position is marked as "00" and a straight line connects between it and all destination waypoints. This line shows the shortest distance between waypoints.
10. Press the [MENU] key to finish.

Navigating to cursor-selected point

1. Press [MENU] [1], [1], [6], [6] to display the Destination menu.
2. Press the [3] key to select Cursor.
3. Press the [ENTER/SELECT] key.
4. As the screen prompts, use the trackball to place the cursor on location desired for destination and press the [+] key. (You may select up to 30 points. To clear a selection, press [-].)
5. Press the [ENTER/SELECT] key. Current position is marked as "00" and a straight line connects between it and "flags" which mark destination waypoints. This line shows the shortest distance between waypoints.
6. Press the [MENU] key to finish.

Following a route

1. Press [MENU], [1], [1], [6], [6] to display the Destination menu. If a route is currently selected as destination, its number is shown at the top of the screen.
2. Press the [3] key to select Route No. and press the [ENTER/SELECT] key.

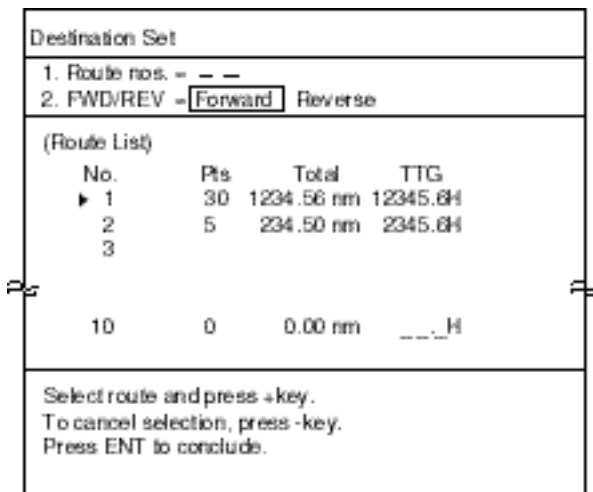


Figure 6-3 Screen for setting destination by route

3. Press the [2] key to select the order in which to traverse the route points; Forward or Reverse.

4. Press the [ENTER/SELECT] key.
5. Press the [1] key to select Route nos. Use the trackball to select route. (You also may enter route number with the numeric keys, in which case omit step 6. If an unregistered route number is entered the buzzer sounds to alert you.)
6. Press the [+] key. (You can cancel an entry with the [-] key).
7. Press the [ENTER/SELECT] key. Current position is marked as "00" and a straight line connects between it and all destination waypoints. This line shows the shortest distance between waypoints.
8. Press the [MENU] key to finish.

Navigating to MOB position

MOB must be set beforehand.

1. Press [MENU] [1], [1], [6], [6] to display the Destination menu.
2. Press the [3] key to select MOB.
3. Press the [ENTER/SELECT] key. Current position is marked as "00" and a straight line connects between it and MOB position. This line shows the shortest distance to the MOB position.
4. Press the [MENU] key to finish.

6.2 Cancelling Navigation

Once you arrive at your ultimate destination you probably won't need the destination waypoint. You can cancel it as follows:

1. Press [MENU], [1], [1], [6], [6] to display the Destination menu.
2. Press the [2] key to select Cancel.
3. Press the [ENTER/SELECT] key followed by the [MENU] key.

Note: MOB destination can also be cancelled by placing the cursor on the MOB mark and pressing the [CANCEL/CLEAR] key. This can only be done when the MOB is not set as destination.

6.3 Skipping Route Waypoints

A route waypoint may be deselected temporarily from the route list. Using the following figure as an example, you would want to temporarily deselect route waypoints 04, since your ship is to change course at waypoint 05 and head to waypoint 03.

Route points cannot be skipped while following a route.

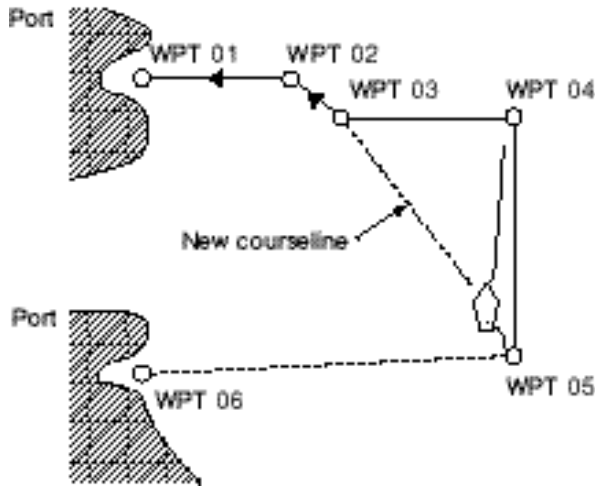


Figure 6-4 Sample route in which waypoints are skipped

1. Press [MENU], [1], [1], [5], [5] to display the Route menu.
2. Press the [1] key to select List.
3. Press the [ENTER/SELECT] key.

4. Select route number.
5. Press the [ENTER/SELECT] key. The route list appears.

Display "Yes" to skip waypoint.

Route (No. 01)			Distance	TTG
	WPT	Skip		
▶ 1	08	YES		
2	11	NO	2345.67 nm	12345.8H
3	15	YES	2345.67 nm	12345.8H
4	18	NO	2345.67 nm	12345.8H
5	22	NO	2345.67 nm	12345.8H
6	---	NO	---	---
7	---	NO	---	---
8	---	NO	---	---
9	---	NO	---	---
10	---	NO	---	---
30	---	NO	---	---

Move cursor and enter WPT no.
 Skip: - No skip: +
 Delete: CLR Conclude: ENT Escape: MENU

Figure 6-5 Route contents (route no. 1)

6. Select route point to skip with the cursor.
7. Press [-] key to display YES (in Skip column). The route data changes to reflect skipped waypoint.
8. Press the [ENTER/SELECT] key followed by the [MENU] key.

To restore the waypoint, press [+] at step 7 in the above procedure.

Note: Only waypoints having waypoint numbers can be skipped. Flag-marked waypoints cannot be skipped.

7. ALARMS

There are four conditions which releases visual and audible alarms: Arrival alarm, Anchor watch alarm, XTE (Cross-track Error) alarm and Border alarm. When an alarm setting is violated the audible alarm sounds and the alarm icon (☐) appears at the bottom right-hand corner of the display. To silence the buzzer, press the [AUDIO OFF] key.

7.1 Arrival Alarm, Anchor Watch Alarm

The **Arrival alarm** alerts you when own ship nears a waypoint by the distance set. The **Anchor Watch alarm** sounds when own ship is moving when it should be at rest.

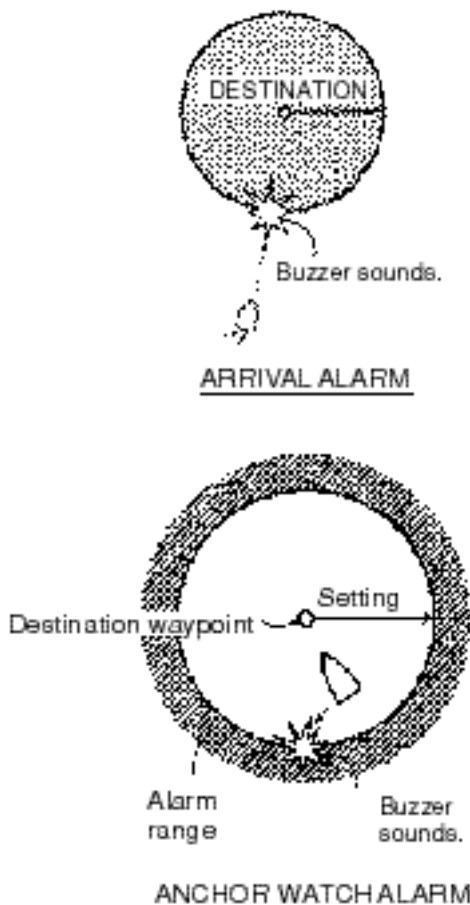


Figure 7-1 Arrival alarm, anchor watch alarm concept

Before setting the arrival or anchor watch alarm, set destination waypoint. For the anchor watch alarm the destination should be own ship position.

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous.
4. Press the [2] key twice to select Alarm Set.

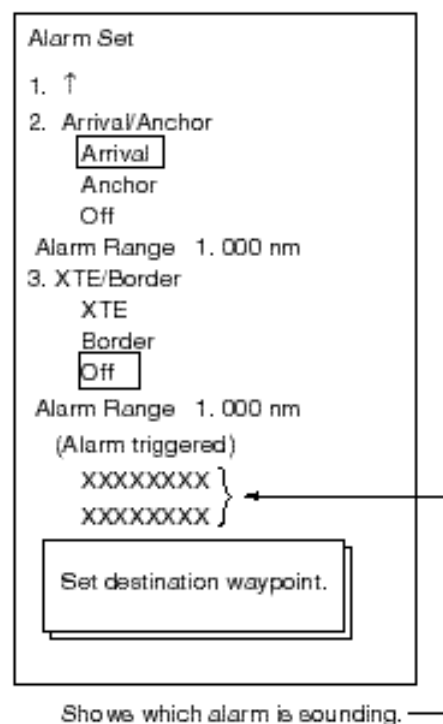


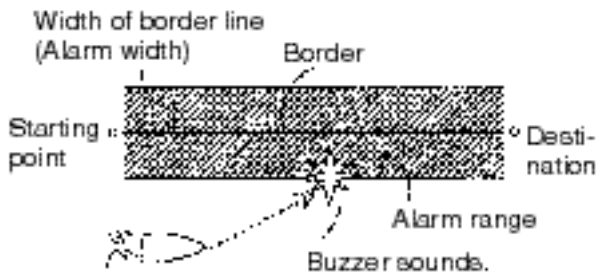
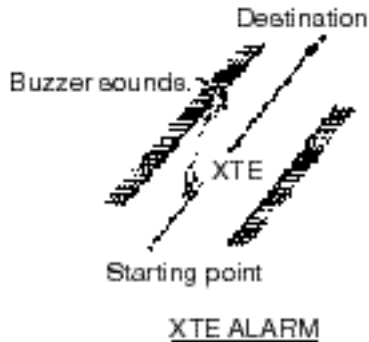
Figure 7-2 Alarm Set menu

5. Press the [2] key to select Arrival or Anchor.
6. Press the [ENTER/SELECT] key.
7. Key in alarm range (0.001-9.999). (To cancel input, press the [CANCEL/CLEAR] key.)
8. Press the [ENTER/SELECT] key.
9. Press the [MENU] key to finish.

To disable the Anchor watch alarm or Arrival alarm select Off at step 5 in the above procedure.

7.2 XTE Alarm, Border Alarm

The **XTE alarm** warns you when own ship is off its intended course. The **Border alarm** alerts you when own ship is nearing an area which you do not want to approach.



*Figure 7-3 XTE alarm,
border alarm concept*

1. Press [MENU], [1], [1], [0], [0], [2], [2] to display the Alarm Set menu.
2. Press the [3] key to select XTE or Border.
3. Press the [ENTER/SELECT] key.
4. Key in alarm range (0.001-9.999). (To cancel input, press the [CANCEL/CLEAR] key.)
5. Press the [ENTER/SELECT] key.
6. Press the [MENU] key to finish.

To disable the Cross-track error alarm or Border alarm select Off at step 2 in the above procedure.

8. MEMORY, MEMORY CARD

8.1 Formatting Memory Cards

Before you can save information to a memory card you must prepare its surface by formatting it. Formatting is a routine procedure you must perform on new cards before you can use them with this unit. You have to initialize them only once. You can format cards you've used before, however, in which case all prior information on them is erased.

1. Press [MENU], [1], [1], [8], [8], [2], [2], [0], [0].
2. Press [2] to select Left or Right, followed by the [ENTER/SELECT] key and the [MENU] key.
3. Insert a blank memory card in the card slot label side left.
4. Press the [MENU] key.
5. Press the [1] key twice to select Video Plot.
6. Press the [8] key twice to select Memory Card.

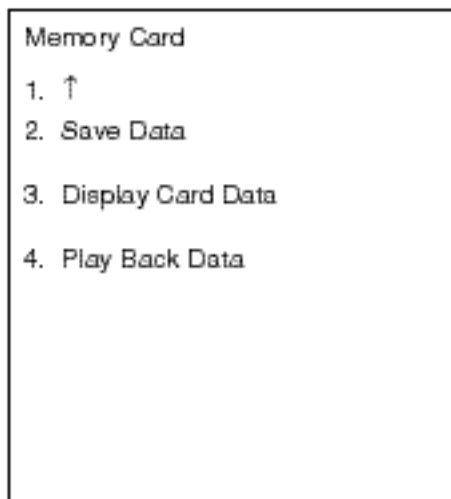


Figure 8-1 Memory Card menu

7. Press the [2] key twice to select Save Data.

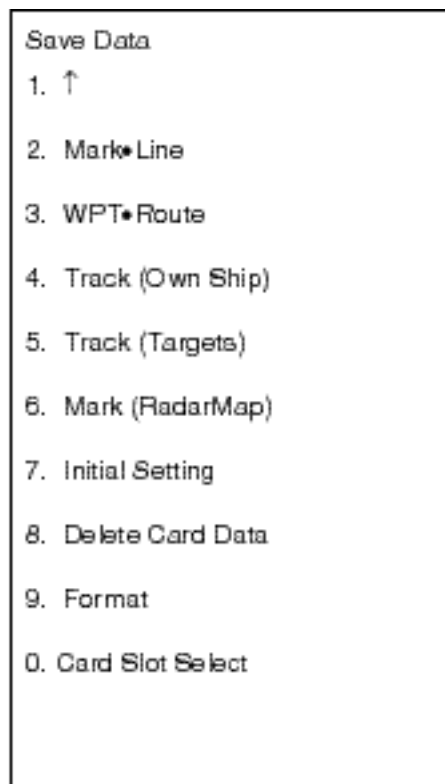


Figure 8-2 Save Data menu

8. Press the [9] key twice to select Format.
9. As the screen prompts, press the [ENTER/SELECT] key to format the card. "Formatting" appears while the card is being formatted, and "Formatting completed" when formatting is completed.
10. Press the [MENU] key to finish.

8.2 Saving Screen Contents to Memory Card

The memory cannot store track and marks indefinitely. For this reason, important track and marks should be saved to a memory card. A memory card can store 50 files. For 6,000 track points, for example, the card can store eight files (card memory capacity: 512 KB).

1. Insert a formatted memory card in the card slot.
2. Press [MENU], [1], [1], [8], [8] to display the Memory Card menu.
3. Press the [2] key twice to display the Save Data menu.
4. Select item to save by pressing appropriate numeric key twice: [2], marks/lines; [3], routes/waypoints; [4], own ship's track; [5], other ship's tracks, [6], marks, [7] initial settings.

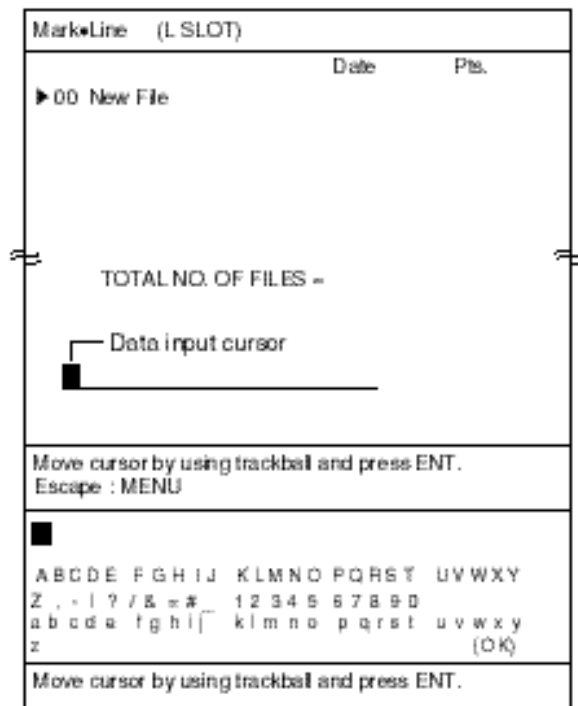


Figure 8-3 Mark•Line Save menu

5. Operate the trackball to select "New file" and press the [ENTER/SELECT] key.

6. Assign a file name as below. A file name may contain 32 alphanumeric characters. For example, assign the file name FURUNO1.
 - (a) Select the character "F" with the trackball.
 - (b) Press the [ENTER/SELECT] key. (You can change a wrong character by selecting it with the trackball and the entering correct character. You may cancel an entire line of data with the [CANCEL/CLEAR] key.)
 - (c) Select the character "U" with the trackball and press the [ENTER/SELECT] key.
 - (d) Complete the file name following a) and b).
 - (e) Select OK.
7. Press the [ENTER/SELECT] key. "Recording" appears while data is being recorded.
8. Press the [MENU] key to finish.

Write protect tab

The write protect tab on a memory card prevents writing over information stored on the card. Slide the tab rightward to write protect a memory card.



Figure 8-4 Write protect tab on memory card

8.3 Displaying Memory Card Contents on the Display

Up to eight files may be played back on the radar display.

1. Insert memory card in card slot.
2. Press [MENU], [1], [1], [8], [8] to display the Memory Card menu.
3. Press the [3] key twice to select Display Card Data.

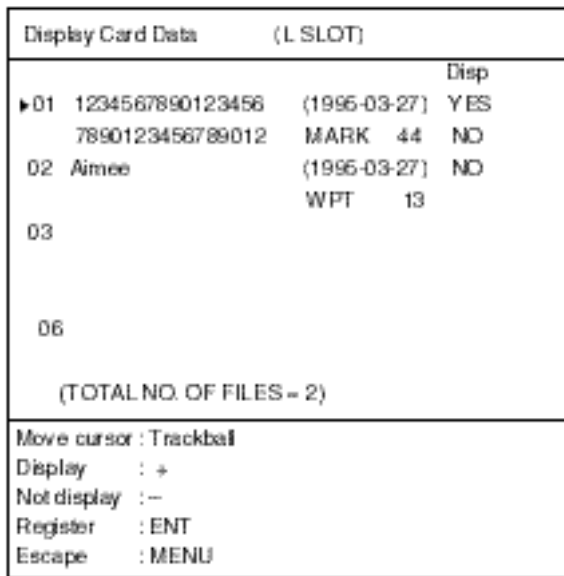


Figure 8-5 Display Card Data menu

4. Operate the trackball to select the file to display.
5. Press the [+] key to display Yes; or [-] to display No.
6. Press the [ENTER/SELECT] key followed by the [MENU] key.

8.4 Playing Back Memory Cards

Memory card contents can be played back on the screen. This feature is useful for editing and copying card contents.

1. Insert memory card in card slot.
2. Press [MENU], [1], [1], [8], [8] to display the Memory Card menu.
3. Press the [4] key twice to select Play Back Data.

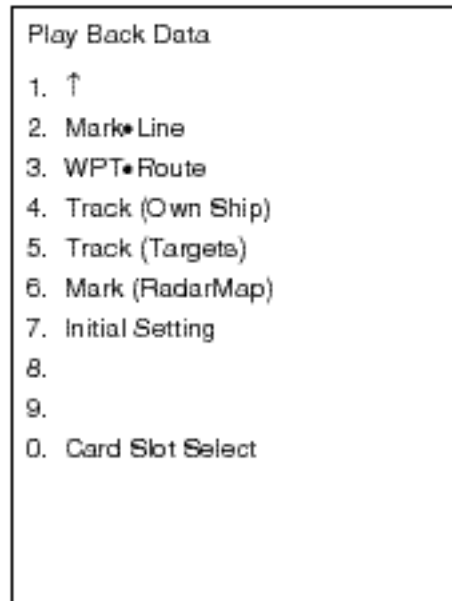


Figure 8-6 Play Back Data menu

4. Press appropriate numeric key among 1-6 to select data to play back.
5. Press the [ENTER/SELECT] key. File list appears.
6. Operate the trackball to select file to play back.
7. Press the [ENTER/SELECT] key followed by the [MENU] key.

8.5 Selecting Memory Card Slot

Select which one of two memory card slots to use as follows:

1. Press [MENU], [1], [1], [8], [8] to display the Memory Card menu.
2. Press the [2] key twice to select Save Data.
3. Press the [0] key twice to select Card Slot Select.

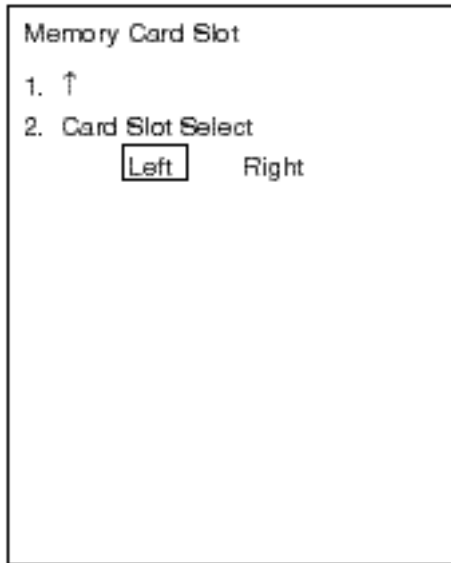


Figure 8-7 Memory card slot menu

4. Press the [2] key to select Left or Right.
5. Press the [ENTER/SELECT] key to register your selection and the [MENU] key to close the menu.

8.6 Erasing Files from Memory Cards

You can erase unnecessary files as follows:

1. Press [MENU], [1], [1], [8], [8] to display the Memory Card menu.
2. Press the [2] key twice to select Save Data.
3. Press the [8] key twice to select Delete Card Data.

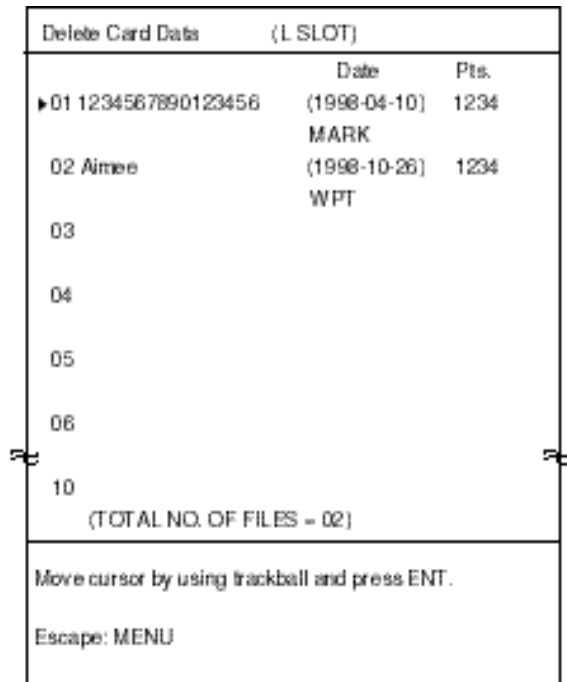


Figure 8-8 Delete card data menu

4. Operate the trackball to select file to erase.
5. Press the [ENTER/SELECT] key.
6. Press the [ENTER/SELECT] key.
7. Press the [MENU] key to close the menu.

8.7 Apportioning the Memory

The memory holds a total of 6,000 points of tracks and marks, and the default memory apportion is 3,000 points each of tracks and marks. However, you may change that setting to suit your operating needs as follows:

Note: All track and marks are erased when the memory is reapportioned.

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [4] key twice to select Apportion Memory.

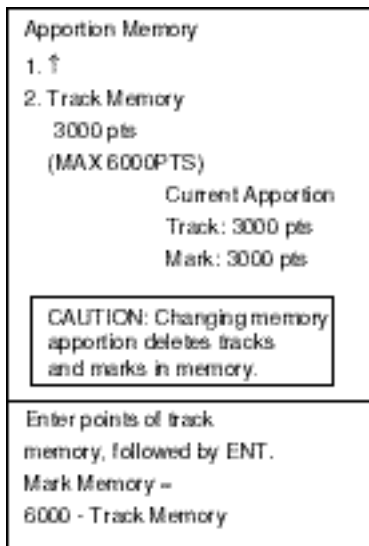


Figure 8-9 Apportion memory screen

5. Enter the memory setting for track points.
6. Press the [ENTER/SELECT] key followed by the [MENU] key.

9. OTHER FUNCTIONS

9.1 Smoothing

Own ship's track may be traced on the screen with a crooked line even though the ship is running straight. This is due to navaid signal variation, and can be compensated by adjusting the smoothing factor. A smoothing setting between 00 and 15 is available. The higher the figure the more the track is smoothed however too high a setting slows response time to speed and course changes.

1. Press [MENU], [1], [1], [0], [0], [5], [5] to display the Initial Setting menu.

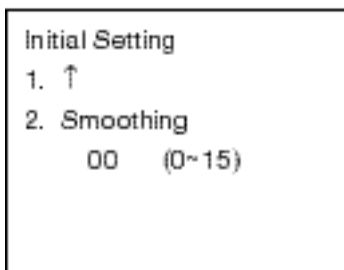


Figure 9-1 Initial setting menu

2. Press the [2] key to select Smoothing.
3. Key in smoothing factor in two digits.
4. Press the [ENTER/SELECT] key to register your selection.
5. Press the [MENU] key to finish.

9.2 Entering Ship's Position Manually

Ship's speed is normally input by the navigator connected to the radar. If the navigator fails enter ship's position manually as follows:

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [7] key twice to select Miscellaneous2.

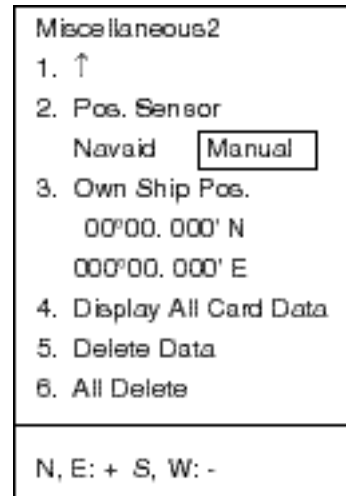


Figure 9-2 Miscellaneous2 menu

5. Press the [3] key to select Own Ship Pos.
6. Key in latitude position of ship. (Use the [-] key to switch latitude coordinate from North to South; [+] from South to North.)
7. Press the [ENTER/SELECT] key.
8. Key in longitude position of ship. (Use the [-] to switch latitude coordinate from East to West; [+] from West to East.)
9. Press the [ENTER/SELECT] key.
10. Press the [2] key to select Manual.
11. Press the [ENTER/SELECT] key to register your selection.
12. Press the [MENU] key to finish.

9.3 Viewing Chart Card Contents

You may display the contents of the chart card on the smallest range scale as follows:

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [7] key twice to select Miscellaneous2.

5. Press the [4] key twice to select Display All Card Data.
6. To return to normal display, press the [MENU] key.

9.4 Clearing All Data

You may clear all track, marks, waypoints and routes to start afresh.

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [7] key twice to select Miscellaneous2.
5. Press the [5] key twice to select Delete Data.
6. Press the [ENTER/SELECT] key.
7. Press the [ENTER/SELECT] key again.
8. Press the [MENU] key to finish.

9.5 Restoring Default Settings

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [7] key twice to select Miscellaneous2.
5. Press the [6] key twice to select All Delete.
6. Press the [ENTER/SELECT] key.
7. Reset the power.

9.6 Adjusting Brilliance

You may adjust the brilliance of marks and track as follows:

1. Press [MENU], [9], [9], [9], [9] to display page 2 of the Brill menu.

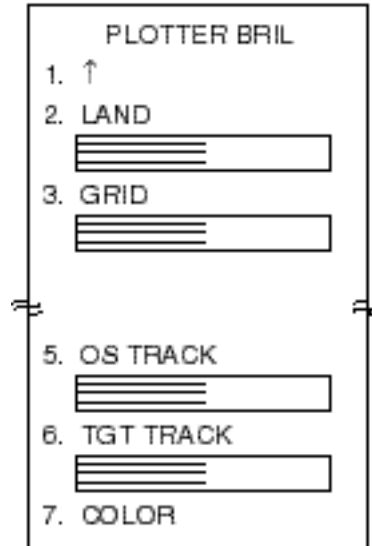


Figure 9-3 Brill menu, page 2

2. Press appropriate numeric key to select item to change brilliance.
3. Use the VRM control to adjust brilliance. Watch the bar graph to judge brilliance level. The range of the bar graph is 10% to 100%.
4. Press the [ENTER/SELECT] key to register and the [MENU] key to close the menu.

9.7 Marker Color

You may change the color of grid, marks, land and depth contour as follows.

1. Press [MENU], [9], [9], [9], [9], [7], [7] to display the Plotter Color menu.

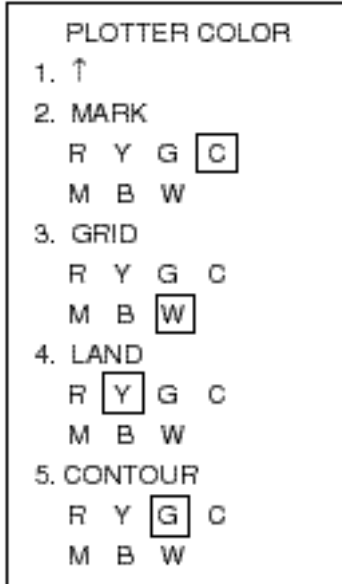


Figure 9-4 Plotter Color menu

2. Press appropriate numeric key to select marker and color desired. R, Red; Y, Yellow; G, Green; C, Cyan (Light-blue); M, Mauve (Purple), B, Blue, W, White.
3. Press the [ENTER/SELECT] key to register your selection and the [MENU] key to close the menu.

10. MAINTENANCE, TROUBLESHOOTING

10.1 Replacement of Batteries

The battery icon (🔋) appears on the display when the voltage of the memory card battery or the battery on the RP-17 Board is low. To find out which battery it is, conduct the diagnostic test as described in Paragraph 10.2. "NG" appears as a battery check results when battery voltage is low. When the voltage of the battery on the RP-17 is low, marks and waypoints stored in the internal database are erased.

The life of the both batteries is about three years. For replacement of the battery on the RP-17 Board, contact your dealer.

	Battery Type	Code No.
Memory Card Battery	CR2025	000-141-093
Battery on RP-17 Board	ER3S	000-127-759

Replacement of memory card battery

1. Slide the tab on the memory card rightward.
2. Pull out the battery case and remove the battery.

Note: Replace the battery within 10 minutes to prevent loss of data.

3. Insert new battery to case plus (+) side up.
4. Insert battery case to memory card.

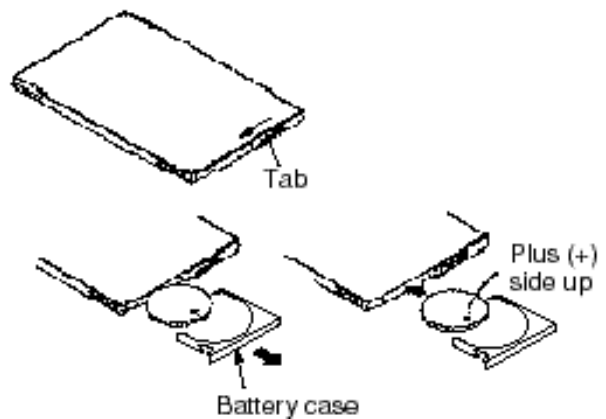


Figure 10-1 Replacement of memory card battery

10.2 Diagnostic Test

1. Press the [MENU] key.
2. Press the [1] key twice to select Video Plot.
3. Press the [0] key twice to select Miscellaneous1.
4. Press the [6] key to select Test. The screen shows OK for normal; NG (No Good) for error. For any NG error contact a FURUNO agent or dealer for advice.

TEST	
Program No.	03591551** (FR-1500 MARK-3 Series) OR 03591531** (FR-1700 Series)
ROM (U5, FLASH)	OK
RAM (U1, SRAM)	OK
RAM (U2, SRAM)	OK
RAM (U3, SRAM)	OK
RAM (U11, SRAM)	OK
RAM (U12, SRAM)	OK
RAM (U13, SRAM)	OK
RAM (U32, DRAM)	OK
RAM (U56, DPRAM)	OK
Main Board Batt	OK
Card Batt (Right)	OK *1
Card Batt (Left)	OK *1
Card (Right)	OK *1
Card (Left)	OK *1
SIO (Autopilot)	OK *2




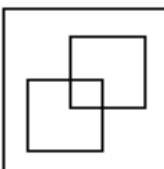
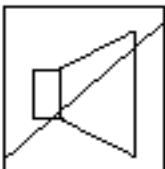
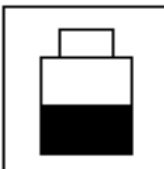

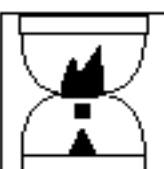
** Program Version No.

Figure 10-2 Diagnostic test results

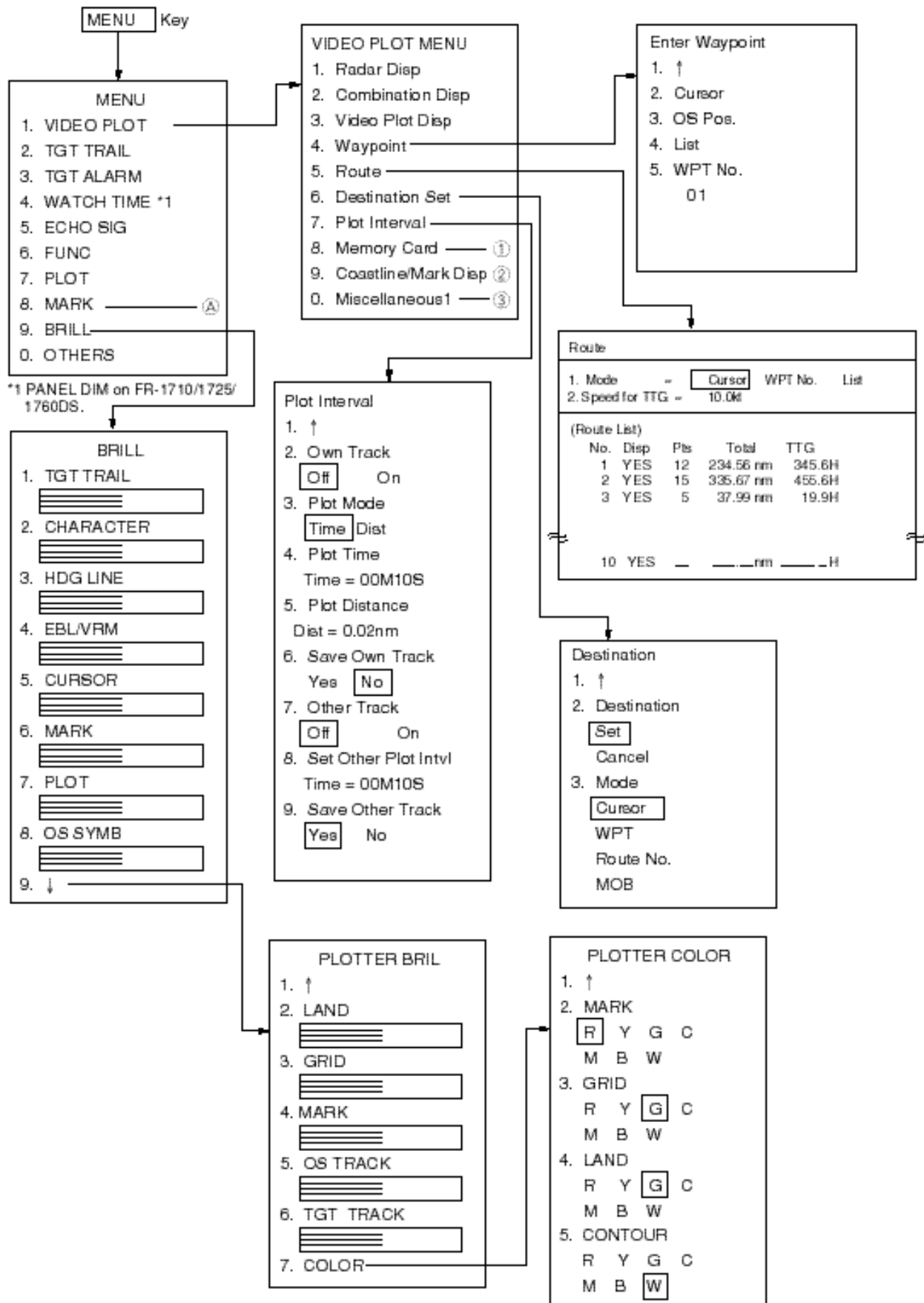
- *1: When memory card is not inserted, the memory card slot is not checked; nothing appears for results of memory card check. If a chart card is inserted or memory card is write protected, NG appears as results.
- *2: Checked by data from radar. If there is no autopilot connected, the check is not conducted; nothing appears as results.
5. Press the [MENU] key to finish.

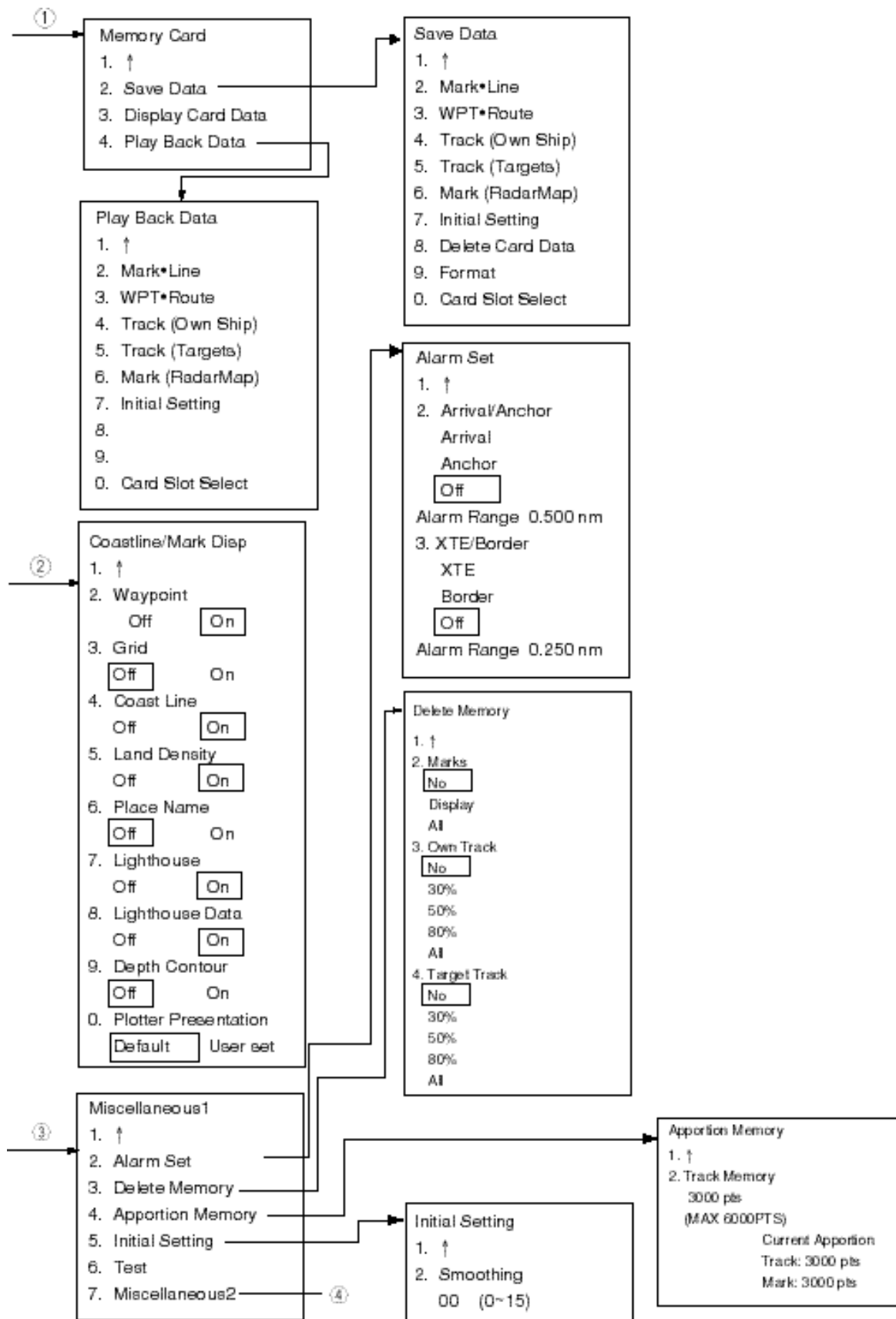
CHART ICONS

The figure below shows all the icons which appear on the radar display.

 <ul style="list-style-type: none">• Wrong chart card inserted.• Chart overshrunk.	 <ul style="list-style-type: none">• Chart overenlarged.• Data reliability is low.
 <ul style="list-style-type: none">• Chart properly displayed; full accuracy.	 <ul style="list-style-type: none">• Chart offset applied.
 <ul style="list-style-type: none">• Alarm setting violated.• Icon disappears when alarm is disabled.	 <ul style="list-style-type: none">• Voltage of battery on circuit board or memory card is low.
 <ul style="list-style-type: none">• Track recording/plotting suspended	 <ul style="list-style-type: none">• Appears when screen is redrawn.

MENU TREE





④

Miscellaneous2

- ↑
- Pos. Sensor
 Navaid Manual
- Own Ship Position
00°00.000' N
000°00.000' E
- Display All Card Data
- Delete Data
- All Delete

⑤

Radar Display

- Mark Selection = 01

01	02
03	04
05	06
07	08 X
09	10
11	12
13	14
15	14

 - 16 Nav Line ---
 - 17 Coastline ---
 - 18 Depth Contour ---
 - 19 Prohibited Area
 - 20 Cable
 - 21 Erase Mark
2. Display
 On Off
3. Erase
 No
Erase Display
Erase All
4. Entry Method
 Cursor
L/L
OS Position
00°00.000'N
000°00.000'E
5. Position Correction

Radar/Video Plotter Display,
Video Plotter Display

- Mark Selection = 01

01 Origin Mark	
02 Waypoint	
03	04
05	06
07	08
09	10 X
11	12
13	14
15	16
17	

 - 18 Prohibited Area
 - 19 Cable
 - 20 Erase Mark
2. MOB
3. Display
 On Off
4. Mark Color
RED PNK PPL ORG
5. Position Correction

Position Correction

- ↑
- Position Corr.
 No Yes
- Delta L/L Entry
- Variation*
 Off Manu. Auto
- Manual Entry

Delta L/L*

000. 0°W
000. 0°E

Manual Δθ*

000. 0°W
000. 0°E

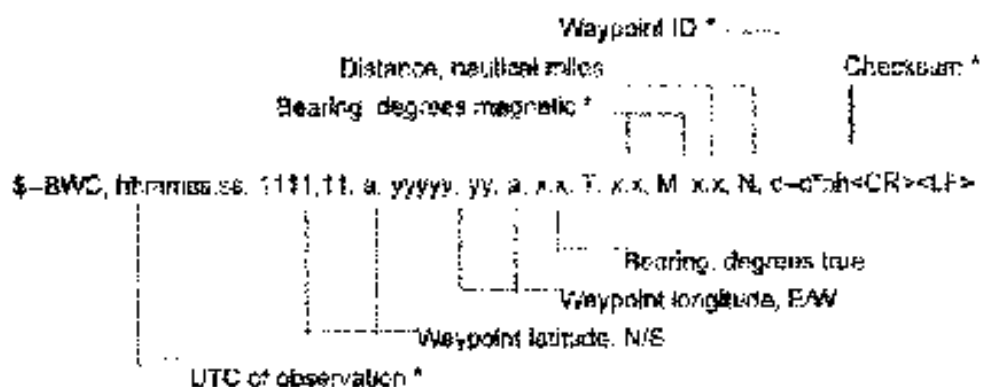
Auto Δθ*

000. 0°E

* Appear only with connection of magnetic compass.

DATA SENTENCES

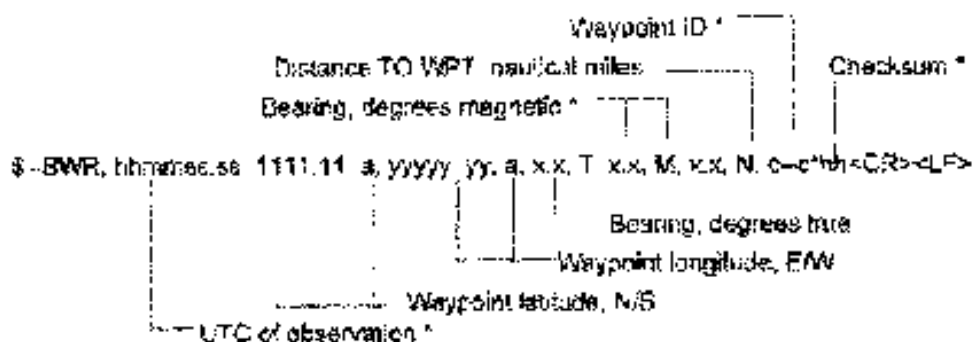
BWC-Bearing and distance to waypoint-great circle



* Not used

BWR-Bearing and distance to waypoint-rhumb line

Time (UTC) and distance and bearing to, location of, a specified waypoint from present position. \$-BWR data is calculated along the rhumb line from present position rather than along the great circle path.



* Not used

RMB-Recommended minimum navigation information

Navigation data from present position to a destination waypoint provided by a LORAN-C, TRANSIT, CMEGA, GPS, DECCA, navigation computer or other integrated navigation system. Checksum is mandatory in this sentence. This sentence always accompanies RMA or RMC sentences when a destination is active when provided by a LORAN-C, TRANSIT or GPS receiver, other systems may transmit \$-RMB without \$-RMA or \$-RMC.

Checksum, mandatory for RMB

Arrival status: A = arrival circle entered or perpendicular passed *

Destination closing velocity, knots *

Bearing to destination, degrees true

Range to destination, nautical miles

Waypoint longitude, EW

\$-RMB, A, x.x, a, c-c, c-c, 111.11, a, yyyyy-yy, a, x.x, x.x, x.x, A*hh<CR><LF>

Waypoint latitude, N/S

Destination waypoint ID *

Origin waypoint ID *

Direction to steer, (L = Port R = Starboard) *

Cross track error, nautical miles *

Status (A = data valid V = navigation receiver warning)

Not used *

SPECIFICATIONS OF VIDEO PLOTTER RP-17

1. GENERAL

- | | |
|---------------------------|---|
| (1) Display | 15-inch high resolution CRT (FR-1500 MARK-3 series)
21-inch high resolution CRT (FR-1700 series) |
| (2) Display Mode | Radar, Radar/Video Plotter, Video Plotter |
| (3) Presentation Mode | HU(Head-up), CG(Azimuth stabilization), CU(Course-up),
NU(North-up), TM(True Motion)
HU and CG mode display ship's course, marks and course line only. |
| (4) Display Range | 0.125/0.25/0.5/0.75/(1)/1.5/(2)/3/(4)/6/(8)/12/(16)/24/(36)/48/72/96/
120* nm
*: maximum range 96 nm for FR-1500 MARK-3 series
(): disabled for FR-1500 MARK-3 series |
| (5) Projection | Mercator |
| (6) Usable Area | 85° latitude or below |
| (7) Electronic Chart Card | Land features filled in Coastline card |
| (8) Track Memory capacity | Radar chart: 3,000 points
Own ship: 6,000 points of track, marks, apportionable
Other ships: 20,000 points max. (FR-1700 series)
6,000 points max. (FR-1500 MARK-3 series) |
| (9) Memory Interval | Own ship: Time (0 to 60 min.)
Other ship: Off, 15/30 sec, 1/2/3/6/10/12 min. |
| (10) Marks | Own ship, MOB, square, circle, line and diamond with line |
| (11) Course Line | Internal setting or external input from NAVAIID |
| (12) Information Display | Own ship's position (Latitude/Longitude)
+Cursor position (Latitude/Longitude)
Range and bearing to waypoint
Range and bearing from origin mark to +cursor |
| (13) Alarm | Arrival/Anchor, Cross track error/Border |
| (14) Position Correction | Delta L/L entry, Bearing correction |

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