Headings & Distances & Bearings

Calculate Headings, Distances & Bearings

In this chapter, you will learn how to calculate distances, headings and bearings. You will put into practice the navigational rule and the Compass , which you use traditionally on a paper chart.

You will discover how **the software** offers you functions which are both simple and yet much more powerful than the traditional navigational tools.

You will use the **Compass** tool to access these functions by clicking the icon in the Toolbar. The Compass drop-down menu appears, choose the Line item to calculate headings and distances or one of the EBL/VRM items for the VRM/EBL calculation determining the range and bearing of objects detected by the radar.

You will use the **Bearing** tool to obtain a fix on the chart once you have taken the necessary seamark bearings using a compass and radar. This tool can also be used to record the position of another ship by entering its bearing a horizontal angle, measured from 0 to 90 degrees, fixing the direction of a line or direction of travel with respect to either a north or south direction. and range (measured using radar for example).

See Also Related Topics:

- Measure Headings and distances between two points on the chart

- Measure Headings and distances from the ship position with one or several points

- Calculate bearings by EBL/VRM

- Calculate fix by two bearings

- Calculate fix by three bearings

- Calculate fix by a bearing and range

Heading & Distance between two points

Click on the **Compass** tool and choose the Line option before calculating headings and distances. Then to calculate the heading and the distance between two points on the chart, place the cursor on the first point, click then drag the mouse until over the second point (and release the mouse button).

Note that when you drag the mouse, the heading and distance between the first point and present position of the cursor on the chart are displayed beside the cursor and are continually updated.

After releasing the mouse button, the heading, distance and Time To Go (**TTG** .) to cover this distance are displayed. The duration is calculated depending on the present speed of the ship.
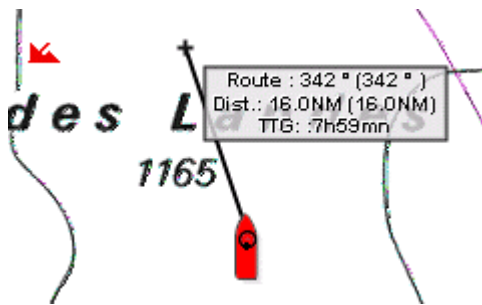
Double click the **Compass** tool in the **Toolbar** to erase the **track** created.


Heading & Distance from the ship position

Double click one or several points on the chart to obtain the same calculation as above, but for between the ship and the double clicked point (s).

Double click the **Compass** tool selected on **Line option** in the **Toolbar** to erase calculation displayed on the chart**.**

You can repeat these operations several times as it is shown in following picture.
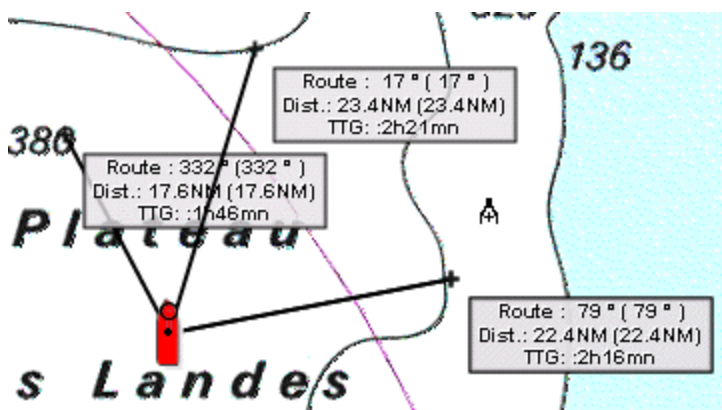

Note: you can double click on any point on the chart, even if the ship icon is not visible on the screen. Check however, when moving the chart, that the course indicated does not cut dry land or cross hazards!

Calculate bearings by EBL/VRM

A variable range marker (**VRM**) and its associated electronic bearing line (**EBL**) is used to determine the range and bearing (respectively) of objects detected by the radar.

A standard VRM is displayed as a circle with its center on your GPS position, and its EBL is displayed as a line from the origin, to the edge of the radar screen. Both are shown as lines. If you range in or out, or offset the center of the display, the original setting of the EBL/VRM remains unchanged.

The software allows two EBL/VRMs to be displayed at the same time such as it is shown in the Toolbar under the Compass tool:
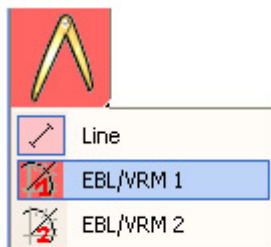

When using the EBL / VRM

To measure the range and/or bearing of a target or a point from your GPS position as you will do on a Radar overlay display. This function can be useful and essential in measuring the width of river mouth, narrow channel as well as navigable navigation lanes.

This is displayed by clicking the EBL/VRM 1 in the Toolbar and drawing on the chart. Repeat with the EBL / VRM 2. If your GPS is not connected you can simulated a GPS position with using the Dead reckoning function.

Then you can draw the EBL /VRM (1 and 2) as it is shown in following picture:
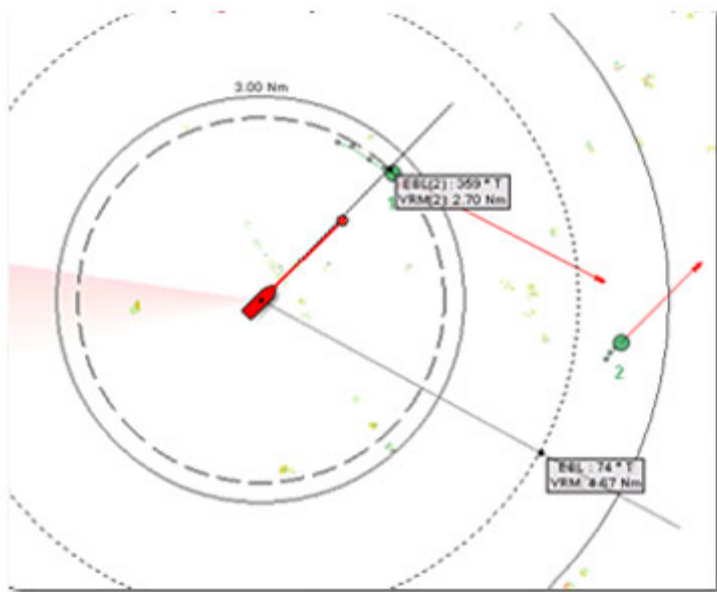
Tool tips are displayed on screen which informed at any time about the EBL (Line representation in the picture) and VRM (ring representation in the picture) range. This can be useful to follow up a point on screen when turning off Radar.

To adjust the EBL/VRM simply click on it and drag it to the desired angle directly on the chart. The angle and distance are displayed in each corresponding tool tip.

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Erasing EBL/VRM from the chart display:

1. To erase EBL/VRM 1 double click the compass tool selected on EBL/VRM 1 option.

2. Do the same with EBL/VRM 2 the compass must be selected on EBL/VRM 2 before.

Get more information on this function in the Radar overlay chapter

Calculate fix by two bearings

Using the **Bearing Tool** or right-click any where on the chart and select the "**Bearing tool**" in the "**Select tool**" sub-menu.

If you have used a compass to take the **bearing** of two seamarks, drag the bearing line from the first seamark (click, drag and release) and then do the same to set the bearing line of the second seamark.

Select **[Calculate fix]** from the **[Route]** menu to obtain as before, the point of the bearing which is recorded in the active layer.

Note:

(1) - it is not necessary to lengthen bearing lines to make the intersection, MaxSea will perform this function.

(2) - instead of sliding the cursor over the chart you can click the seamark and then use the keyboard to enter the bearing in the dialog box which opens.

To erase the trace of the bearing taken go to the **[Route]** menu and select **[Delete Bearing]** or double-click on the Bearing tool.

Calculate fix by three bearings

Using the Bearing Tool or right-click any where on the chart and select the "**Bearing tool**" in the "**Select tool**" sub-menu.

Proceed exactly as explained in the above paragraph to Calculate fix by two bearings , but trace three **bearing** lines instead of two.

After selecting **[Calculate fix]** from the **[Route]** menu, the software displays the point of theoretical calculation as well as the triangle of accuracy.

These elements (point and triangle) are recorded in the active user's data layer.

Note: instead of sliding the cursor over the chart, you can click the seamark taken, then use the keyboard to enter the bearing in the dialog box available.
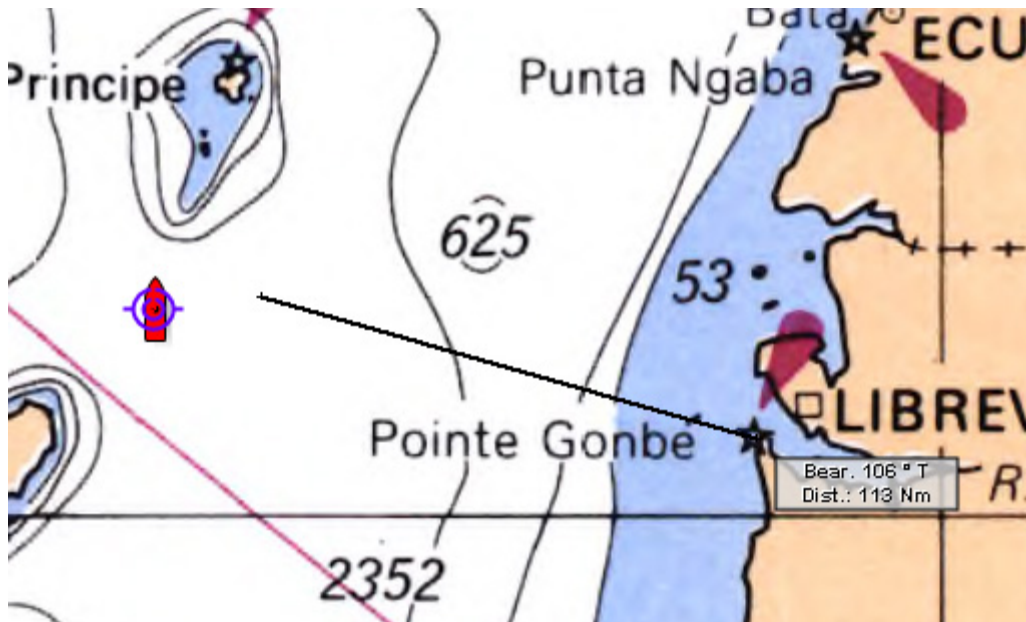
Go to the **[Route]** menu and select **[Delete Bearing]** to erase the trace of the bearing taken or double-click on the Bearing tool.

Calculate fix by a bearing and a range

Right-click any where on the chart and select the **"Bearing tool"** in the **"Select tool"** sub-menu.

If you have taken the **bearing** of a seamark (fixed object such as a point of land) using a compass or a radar and if you know the range separating you from the seamark, click this seamark on the chart and then drag the cursor over to the point where the bearing and range correspond to the values taken.

Select **[Calculate fix]** from the **[Route]** menu.
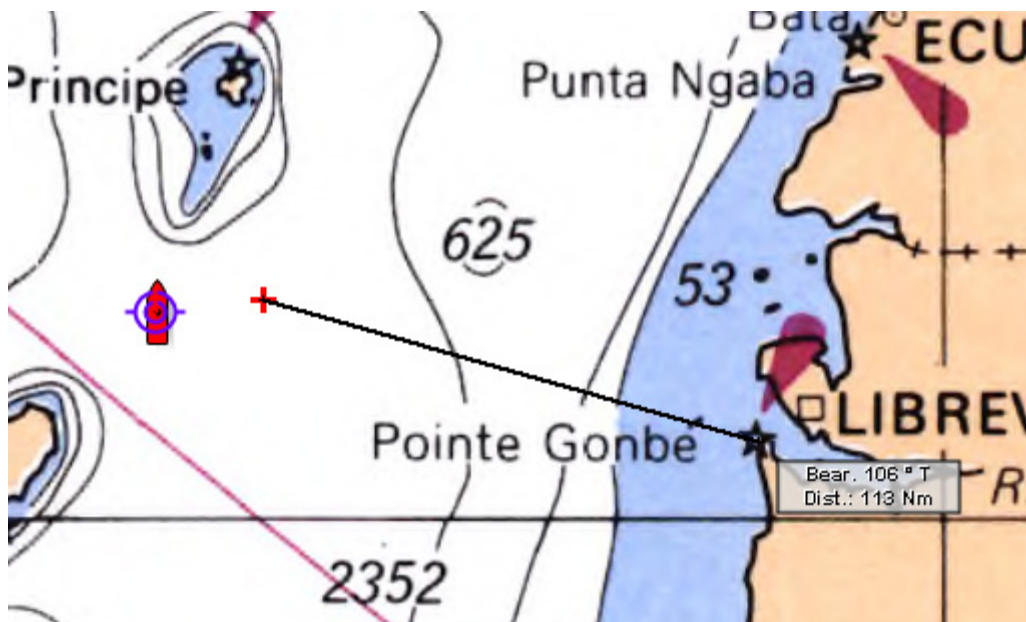
A mark (red cross) is displayed on the chart and recorded in the <u>active layer</u>. The trace line of the bearing remains displayed on the chart.

<u>**Note:**</u> instead of sliding the cursor over the chart, you can click the seamark taken, then use the keyboard to enter the bearing in the dialog box available.

Go to the **[Route]** menu and select **[Delete Bearing]** to erase the trace of the bearing taken or double-click on the Bearing tool.

Note that the point from the calculation remains displayed on the char (red cross)t. It has been recorded onto the active layer. Use the delete tool on the palette if you want to delete it.