

AutoTide Index

To view further information on one of the topics listed below, point to the topic and click the mouse button, or press the TAB key to highlight each item in turn - this item can then be chosen by pressing the ENTER key.

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Purchasing

AutoTide is supplied in standard 3.5" DOS/WINDOWS disk format and is available from the distributors listed below.

The following databases comprising over 4500 tidal locations are currently available for use with AutoTide:

DATABASE	Locations	DESCRIPTION
AFRICA.TID Madeiras, Canaries	414	Africa from Ceuta to Gulf of Oman, Azores,
ARCTIC.TID Elizabeth Isles	147	Arctic Ocean, Norway, Iceland, Greenland, Queen
AUSTRAL.TID islands	401	Australia, New Zealand and surrounding reefs and
BRITAIN.TID	401	UK, Republic of Ireland & Channel Isles
EUROPE.TID	355	Europe: West Coast and N & S Mediterranean
INDIA.TID including Sumatra	361	Pakistan and Indian Sub-Continent up to and
INDONES.TID	313	Java, Sulawest, Irian Jaya, New Guinea
JAPAN.TID	364	Japanese Coast
MALAYSIA.TID	292	W. Malaysian Peninsula, Philippines, Borneo
NEAMERIC.TID Atlantic Coast	370	North American Continent: USA and Canada -
NWAMERICA.TID Pacific Coast	260	North American Continent: USA and Canada -
ORIENT.TID	331	Gulf of Thailand, Vietnam, China and N & S Korea
SEAMRIC.TID Assorted Islands	378	Eastern America: Mexico to Cape Horn. Antarctica &
SWAMERIC.TID Pacific Isles.	246	Western America: Cape Horn to Mexico including

Distributors:

UNITED KINGDOM **The Thompson Partnership**
USA **Ocean State Publishing**

The Thompson Partnership - United Kingdom

You can order AutoTide from The Thompson Partnership by payment with cheque or the following credit cards: MasterCard, VISA, Diners Club and American Express.

Telephone Orders: (44/0)-1889-564601

Fax Orders: (44/0)-1889-563219

Internet Orders: sales@ttp.co.uk

Internet Support support@ttp.co.uk

Mail Order Address The Thompson Partnership, Lion Buildings, Market Place,
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SWAMERIC[]

£ _____ [] Copies of AutoTide Standard including one database of choice @
£59.00

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£79.00

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£99.00

£ _____ [] Copies of additional databases (please specify) @ £10.00

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£ 3.00 **Shipping and Handling**

£ _____ **TOTAL**

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Ocean State Publishing - USA

You can order AutoTide from Ocean State Publishing by payment with check or by MasterCard, VISA, American Express or Discover.

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INDIA[] INDONESIA[]
JAPAN[] MALAYSIA[] NEAMERIC[] NWAMERIC[] ORIENT[]
SEAMERIC[] SWAMERIC[]

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\$ 5.00 _____ Shipping and Handling
\$ _____ TOTAL

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Getting Started with Tidal Heights

To view further information on one of the topics listed below, point to the topic and click the mouse button, or press the TAB key to highlight each item in turn - this item can then be chosen by pressing the ENTER key.

Welcome to AutoTide.

Follow these 6 steps to predict the height of a tide using AutoTide.

1. Click the Heights button
2. Click the Clock Select button to GMT
3. Click on the database for the region
4. Choose a location from the list-box marked Location
5. Click the USE CLOCK checkbox
6. Click the Graph button.

AutoTide will now draw a graph of the tide at whichever location you chose.

Getting Started with Tidal Streams

To view further information on one of the topics listed below, point to the topic and click the mouse button, or press the TAB key to highlight each item in turn - this item can then be chosen by pressing the ENTER key.

Welcome to AutoTide.

Follow these 6 steps to predict the strength and direction of a tidal stream using AutoTide.

1. Click the Streams button
2. Click the Clock Select button to GMT
3. Click on the database
4. Choose a stream record from the scrolling list-box
5. Click the USE CLOCK checkbox
6. Click the Graph button

AutoTide will draw a graph of the tidal stream strength and direction at whichever location you have chosen.

Common Queries / How Do I ?

To view further information on one of the topics listed below, point to the topic and click the mouse button, or press the TAB key to highlight each item in turn - this item can then be chosen by pressing the ENTER key.

[Calculate Charted Depth](#)

[Enter the date and time for prediction](#)

[Predict if vessel will run aground on next Low Tide?](#)

[Predict length of Anchor Warp / Chain for next High Tide](#)

[Predict Height of the Tide for now](#)

[Predict Height of the Tide for past or future](#)

[Predict Times and Height of High / Low Tide](#)

[Predict Times of Beach Availability](#)

[Predict Times of Clear Passage](#)

[Predict Under Keel Clearance](#)

[Set Multipliers for Anchor Warp / Chain Length Calculation](#)

[Set Time Zone Differences](#)

[Set Under Keel Clearance Alarm](#)

[Set which Time Zones to Use](#)

[Setting Units of Height \(Metric or Feet and Inches\)](#)

[Setting Units of Speed \(Knots, Miles per Hour, Km per Hour, Meters per Second\)](#)

[View Information Display](#)

The Main Screen - Introduction

This is the window which is first displayed when AutoTide loads. The main screen is divided into three main areas, it also contains a menu bar and the graph and table command buttons.

1. Mode - Streams or Heights

Use this controls to determine whether AutoTide calculates streams or heights

2. At: - the middle frame

a. For **AutoTide** in **heights** mode:

Choosing the tidal heights database

Selecting the tidal heights location

Using the find button for tidal heights

b. For **AutoTide** in **streams** mode:

Choosing a streams database

Selecting the tidal stream location

Using the find button for tidal streams

Interpolation between tidal stream locations

Creating or Changing a Tidal Stream Database

3. When: the lower frame:

Time zones and clocks

Which zone to use

Entering a prediction date and time

4. Command Buttons

Table

Graph

5 Menu Options

These options are described in the following pages, use the >> button to go to the next page.

The Main Screen - Choosing a Tidal Height Database

With AutoTide in **heights** mode, use the pull-down text box marked database to select the database for the region of your prediction. Each database contains hundreds of locations and their associated tidal constants. There are 14 databases available for use with AutoTide which contain in all over 4500 locations. These are named according to area and can be ordered from your distributor.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Main Screen - Choosing a Tidal Height Location

With AutoTide set in tidal height mode, choose the location by using the pull-down text box which will display in **ALPHABETIC** or **GEOGRAPHIC** order or use the **RANGE** option to find the nearest location to your position . You can view the listed items by operating the slider bar, or search the list by entering the first few letters of the location in the text entry area of this box. The box will then pull down to the matching item. If you cannot find your desired location then choose the nearest place by sea, bearing in mind the peculiarities of tidal flow in restricted regions of the sea and the increased tidal height often present in estuaries. The order is controlled by the buttons marked Alphabetic Order, Geographical Order and Range.

Alphabetic Order

This option causes the locations in the pull-down text box to be placed in alphabetically. Once a location is selected it will still remain selected even after the re-ordering of the items in the list.

Geographic Order

Clicking on this button causes the contents of the locations pull-down text box to be placed in geographical order. This is the sequence of the locations around the coast. In cases where the land has a complex shape this order is sometimes compromised. Once a location is selected it will still remain selected even after the re-ordering of the items in the list.

Range Order

This option selects the nearest tidal location in AutoTide to your position. Activating it causes two text boxes to be displayed labelled latitude and longitude. Enter your current location into these boxes using either decimal degrees or degrees and minutes - use a space for the gap between degrees and minutes. Next click on the button marked Find. AutoTide will search the index of all of its databases irrespective of which ones you have purchased or which one is currently loaded. The nearest 10 locations to the position provided are listed in the locations box - if you have the appropriate database on your computer then the location is selected ready for your use. The Find facility operates seamlessly across the boundaries between the database areas. You can select a location from the locations textbox once the range button has been activated, and AutoTide will attempt to load the appropriate database if it is not already loaded.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Main Screen - Choosing a Tidal Stream Database

With AutoTide in **stream** mode, use the pull-down text box marked database to select the database which contains the required tidal diamond.

You can also create your own databases of tidal stream information directly by entering the data you require from nautical charts and almanacs. Use the Streams Database button for this.

Each database can contain many hundreds of locations and their associated tidal speed tables as required.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Main Screen - Choosing a Tidal Stream Record (Diamond)

With AutoTide set in tidal stream mode and with a tidal stream database already selected, choose the stream required within the database by using the scroll box below the database control.

Manual Selection

To manually select a tidal stream (diamond) click on the one required . Its parameters will appear in the black selected locations areas to the left. The check box immediately to its right will appear checked to indicate that this record has been chosen. To select more than one stream manually - use the Ctrl key in conjunction with the mouse left button. The parameters of up to three records will appear in the black selected locations areas to the left.

Selection by Distance

To select the three nearest tidal streams (diamond) to a given location enter the co-ordinates of the location into the two text box areas labelled latitude and longitude, using either decimal degrees or degrees and minutes - use a space (or the @ key) for the gap between degrees and minutes. Next click on the Find button to locate the nearest tidal stream (diamond) within the currently loaded tidal stream database. Its parameters will appear in the black selected locations areas to the left. The check box immediately to the right of the nearest record will appear checked to indicate that this record has automatically been chosen.

The Main Screen - Choosing Multiple Stream Records / Interpolation (This facility is intended for the advanced user only)

AutoTide 3 can linearly interpolate between two or three nearby tidal stream records. This means that AutoTide 3 can produce a prediction of the tidal stream speed and direction at any point in-between neighbouring tidal stream locations.

This linear interpolation should only be used under the following conditions:

1. The user is reasonably confident that the water speed in any given direction varies linearly between the chosen locations - and
2. The source location is between the two or three chosen stream locations. (When the source point is not in between the source locations, the percentage displayed is negative indicating its effect will be subtracted from the overall result.)

So if you require the tide half-way between two existing records on the database you can get AutoTide to use 50% of one and 50% of the other. Selection of multiple locations is achieved by clicking on the appropriate check boxes. The percentage of the location is displayed in the column marked %. AutoTide uses linear interpolation techniques for both the two and three point methods.

To select more than one tidal record click on the check boxes to the right of each tidal record (in black).

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Main Screen - Selecting the Time Zone.

This section applies to both Tidal Heights and Streams.

Select which of the three time zones is required.

This time zone will apply to times entered by the user and to the times displayed throughout AutoTide. This time is used to in the graph facility, alarm facility and information panel and also it can be used in the prediction date and time boxes.

The time zones / clocks are "System", "Local" and "GMT".

For example once GMT is selected, all times and dates entered should be in GMT. Also AutoTide will always display times in GMT on graphs and tables and the time used in the graph, alarm and information facilities will also be in GMT. The setting of the zones and clocks is via the Settings|Time Zones menu accessible from the Main Screen. See the Setting Time Zones section for further details.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Main Screen - Predict for Now

Click the **Use Clock** option on the Main Screen if you want a prediction commencing for the time now. With this option checked the current date and time are picked up from the appropriate clock. There is then no need to enter the time and date manually. If this option is left unchecked, you will have to enter the time and date yourself from the keyboard. You can only enter a time and date when this box is unchecked.

The Main Screen - Date and Time of Prediction

To enter the time and date directly:

1. Ensure that the USE CLOCK check box is unchecked on the Main Screen and
2. Enter the time and date for which you want a prediction into the appropriate fields on the Main Screen.

The Main Screen - Menu Options

Settings

Vessel ID

Draught,

Echo Sounder Offset

Time Zone

Monochrome/Colour

Tidal Height Units (Meters / Ft and Ins)

Tidal Stream Units(Knots / Miles per Hour / Km per hour / m per second)

Help

This Screen Provides help on the AutoTide main screen

Contents Activates the help system on the contents page.

Accuracy Activates the help system on the page about AutoTide accuracy.

Purchase Activates the help system on the page about purchasing.

About Displays information about the program and its author.

Exit

Note Both the tidal height units menu option and the tidal stream units option determine the units which AutoTide uses for graphical and text output and also determines the units accepted in the relevant data entry boxes.

The Main Screen - Menu Option - Exit

Use the **Exit** menu option on the Main Screen to close down AutoTide.

If you have made any changes to the settings of AutoTide the registered version will ask you if you wish to save the settings to a configuration file, so that the next time AutoTide is used it will automatically load these settings.

Such settings include last used database, location, clock settings, vessel draught etc.

The Main Screen - Creating a Graph

Clicking the **Graph** button on the Main Screen causes AutoTide to draw a tidal graph.

The type of graph (streams or heights) is determined by the option button at the top of the main screen.

The graph will start at the given prediction date and time (rounded down to the nearest two whole hours or rounded from midnight depending on the graph settings).

The Main Screen - Making Tide Tables

The **Tables** button on the Main Screen is used when you want to make tide tables - either stream tables or height tables.

The type of table (heights or streams) is determined by the option button at the top of the main screen. Operation will lead to either:

Tide Height Table Settings

Tidal Stream Table Settings

These will enable you to alter which tidal details you want to be displayed on your table.

Tide Table Height Settings - Introduction

This window is activated from the Tables button on the Main Screen. It enables you to set up which data is to be displayed and how it is to be listed. The options are:

Option

Duration
High and Low Waters
tides
Regular Intervals
in minutes.
Times of Passage
seaway of given depth.
Highest
duration.
Lowest
duration
Clearance Information
Clearance given the depth and draught.
Number of Columns
tide table.
Cancel
the Main Screen.
Calculate

Description

Number of days of a table
Times and heights of high and low
tides
Heights of tides at regular intervals
Times of access of a vessel into a
Highest tides occurring in the
Lowest tides occurring in the
Optionally lists the Under Keel
Lists the number of columns in the
Cancel all changes and return to
Creates the tide tables.

Tide Table Stream Settings - Introduction

This window is activated from the Tables button on the Main Screen. It enables you to set up which data is to be displayed and how it is to be listed. The options are:

Option

Duration
Slack Tide
Peak Current
Regular Intervals
regular intervals in minutes.
Below
below a given value.
Fastest
duration.
Number of Columns
tide table.
Cancel
the Main Screen.
Calculate

Description

Number of days of a table
Times of the minimum tidal speeds.
Times of maximum tidal speeds.
Tidal speed and directions at

Times when the tidal speed is

Fastest tides occurring in the

Lists the number of columns in the

Cancel all changes and return to

Creates the tide tables.

Tide Table Settings - Setting the duration

The tide table settings panel is activated from the Tide Tables button on the Main Screen.

Using the **DURATION Days** option and enter the number of days of tables required or use the up and down arrows. Remember the start date is not entered here but is the date that has already been entered on the Main Screen.

Tide Table Stream Settings - Setting what is listed.

Slack Tide (Minimum) - produces a table of the times of the lowest turning points in the tidal speed graph. Since the speed is plotted as a scalar in AutoTide this is irrespective of direction.

Peak Current - produces a table of the times of the highest tidal speed graph (again irrespective of direction).

At Regular Intervals - produce the tidal stream speed and direction at regular intervals specified in minutes.

Below Speed of - produces the times when the tidal speed falls below this speed specified. This could be useful for the timing of operations which are hampered by tidal streams such as fishing and diving operations.

Fastest

This produces a table of the fastest tides in the duration - with the fastest first. The number to be listed can be specified in the box to the right of this option.

Number of Columns

Use the box marked Number of Columns to set the number of columns in the table. The tide information is listed horizontally in sequence across the page. If there is insufficient room then the listing wraps around the page.

Tide Height Table Settings - Setting what is listed

Use the options in the **LIST** area in combination with the option **Clearance Information** to set what you want to list when a table is subsequently requested.

·
High and Low Water - produces listing of High and Low Tides and Times. You can also click on **clearance information** if you want this to be displayed as well.

·
Regular Intervals - produce the Tide Height at regular intervals specified in minutes when a table is subsequently requested. You can also click on **clearance information** if you want this to be displayed as well.

Times of Passage - produce the times when the boat will not run aground. For safety we suggest you always use a larger value for the draught than its actual value in order to allow for a margin of error. As this option is dependant upon clearance factors the **clearance information** check box is automatically activated.

Highest - This option produces a tidal height table of the highest tides during the interval specified. The number to be listed can be specified. They are listed in descending order (highest first).

Lowest - This option produces a tidal height table of the lowest tides during the interval specified. The number to be listed can be specified. They are listed in ascending order (lowest first).

Clearance Information

In addition to the option which you have chosen above, this option will list the Under Keel Clearance in the table. You can set the Draught and Charted Depth here if you wish.

Number of Columns

Use the box marked Number of Columns to set the number of columns in the table. The tide information is listed horizontally in sequence across the page. If there is insufficient room then the listing wraps around the page.

Tide Table Settings - Cancel

Cancel Use this button to abandon any changes you may have made on the Settings Panel and to return to the AutoTide main screen

Tide Table Settings - Starting the Calculation of Tables.

Calculate

Use this button to enter the new changes into the system and calculate the tide tables.

The progress thermometer will now be displayed and will keep you informed of the progress AutoTide is making.

Progress

The progress window shows you how far AutoTide has got along the job of producing the graph or table requested.

You can abandon the process of calculating the tide tables by clicking on **abandon**. If you really want to produce next years tide tables, maybe you should do it overnight.

NB

It can take quite some time to do all the calculations needed to make the tide tables. This is especially so if you are running AutoTide on a machine without a math coprocessor. This includes all 386 machines and also the 486SX and SL unless a coprocessor chip (387 or 487) has been specially fitted. All machines and onwards including 586 and the PENTIUM series already contain a math coprocessor and so should run reasonably quickly. If you have an early processor from INTEL you should ensure that it does not suffer from the recently publicised mathematical bug which afflicted the initial batches of PENTIUM chips and could very easily afflict this program.

Tide Table - Output

This window is used to display the text of the tide table, whether it is for tide heights or tidal streams. If the text does not fit you should use the scroll control to raise or lower the viewed area.

Use the **Print** option to print out the table on the default printer.

Use the **Clipboard** Option to save the tabulated data in the clipboard.

Use the **File** option to save the output data in an ASCII file.

Time Zone Differences - setting the zones.

You can set here the time zones of the three clocks used by AutoTide. The zone information is needed by AutoTide for its predictions - even if you do not want to use the real-time clock option Use Clock. Three zones are provided:

1. SYSTEM - the zone of the computers clock,
2. LOCAL - the zone of the user
3. GMT - the zone of the Greenwich Meridian (UT)

The GMT and LOCAL times are derived from the SYSTEM clock with the appropriate additions or subtractions. Once the clocks have been set you can subsequently switch AutoTide between any of these three time zones as required as described in Selecting the Zone and Clock. Note that whilst the system and local zones can be set, the GMT clock zone cannot - it is of course always 0000. Similarly whilst the GMT clock and local clocks can be set the System one cannot be set here - it is of course set by the computer from the Windows Main Screen.

1. **SYSTEM.** The user should first decide if the computer clock is reading the desired time - if not it should be set using the Windows Main Screen or from DOS. This is described in your computer user's manual and also in Appendix 1 of this manual. Next you should set the time zone of the computer System clock by using the "+" and "-" buttons provided.

2. **LOCAL.** The LOCAL Zone is intended so that you can operate AutoTide in another time zone without having to change your computer's clock. You should decide on which Local Time Zone you want to use - or you can arrange that the LOCAL time zone is set according to the time zone of the Tidal Location by clicking on the check box marked - **Set LOCAL Zone Automatically.**

3. **GMT.** This clock should now be correct. If it is not displaying the correct time you may have inadvertently entered the wrong time zone for computer system clock. You can correct this by setting the desired time here - causing the correct time zone to appear next to SYSTEM or by resetting the zone of the SYSTEM directly.

As a final check please ensure that all three clocks read correctly before you click on OK.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Vessel ID - Entering a name

This is accessed from the Main Screen under the settings menu.

Use this facility to enter the name of your vessel or the name of your club/society. This name will be used on all output both printed and displayed.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Draught - Setting the draught of your vessel in AutoTide

This is accessed from the Main Screen under the settings menu.

Use this facility to set the draught of your vessel. We recommend you enter a larger figure than the actual draught to allow for a margin of error. The draught can be entered in a number of places within AutoTide. Whenever a new draught is entered in any one of these places, it updates the figure throughout AutoTide.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Echo Sounder Offset - Setting the value in AutoTide

This is accessed from the main Screen under the settings menu.

Use this facility to set the echo sounder offset of the equipment fitted on the vessel. It is used by the Anchor & Mooring Calculator to provide the user with an indication of the Echo Sounder Reading required NOW to avoid grounding on the next low tide.

The Echo Sounder Offset is the figure that would be displayed by your equipment when the vessel is about to run aground i.e. when the Under Keel Clearance is zero.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Use of Monochrome and Colour Video Displays

AutoTide has two colour schemes - one optimised for Colour Monitors and one for Monochrome Displays.

We recommend using the Monochrome settings with monochrome LCD laptop computers.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Tidal Height Units: Meters / Feet and Inches

This option is selected on the settings menu entitled Tidal Height Units on the AutoTide Main Screen. This option also converts any stored data to the appropriate values and in the registered version is saved for the next operation of AutoTide

Meters

When in metric mode all output is in metres and all output values are followed by the letter 'm' for the avoidance of doubt. All input values are taken as in metres whenever appropriate, unless the number that is entered contains a single quote ' as in 3'9, in which case the input value is converted to metric on input. So after entering 3'9 all values would be displayed as 1.1m.

Feet and Inches

Use this option to accept and display all data in feet and inches. Any output data which is displayed contains a single quote for feet (e.g. 3'11). The number following the quote is in inches. All input values are taken as in feet whenever possible even if entered in decimal. That is 3.5 is taken as meaning 3'6 and 3.0 is taken as 3 feet. Metric quantities can be entered explicitly with the m i.e. 3.5m can also be entered in which case it is converted to feet and inches i.e. 11'6.

NB On registered versions of AutoTide you do not have to re-select this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

Tidal Stream Units: Knots / Miles per hour / kilometres per hour / meters per second

This option is selected from the settings menu Tidal Streams Units on the AutoTide Main Screen and enables the user to set the units of operation of AutoTide for tidal streams.

AutoTide 3 takes into account both these settings and also the units in which the data was originally entered (see [Streams Database](#)) before making a stream graph or table.

NB On registered versions of AutoTide you do not have to re-select this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Tide Height Graph - Introduction

This is accessed from the Main Screen using the Graph button. Clicking this button causes the graph to be drawn together with its associated textual data.

The graph displays the tidal height and lists details about the high and low tide and the times of clear passage. The graph colour changes according to whether your vessel would be aground or not. The times when your vessel would run aground are drawn in red, and when your vessel would be afloat are in blue. This is also listed in text on this screen. The vertical axis shows the height of the tide above Chart Datum(CD). The Charted Depth is shown as a horizontal yellow line on the graph.

The active elements are the Menu options:

Anchor
Information
Zoom
Settings
Print
Help
Exit

The three numerical display areas to the right of the text:

Charted Depth
Draught
Under Keel Clearance

and the

Cursor Line - The dotted green vertical line.

NB To plot the previous graph click on the button marked "<" and to plot the following graph click on the button marked ">".

These options are listed on the following pages. Use the >> button to advance page by page.

The Tidal Height Graph - Displaying the Anchor Calculator

The **Anchor** menu option activates the Anchor Calculator. It automatically copies the next highest tide into the depth field of the Anchor Calculator.

The Tidal Height Graph - Activating the Information Display

The **Information** menu option on The Tidal Height Graph activates the Information Display which uses extra large text for easy viewing.

This display also contains the Under Keel Clearance Alarm.

The Tidal Height Graph - Setting the Graph Scales

Use the **Zoom** menu option to zoom in or out of the graph.

The Tidal Height Graph - Changing or Entering Charted Depth, Draught and Under Keel Clearance

Settings|Charted Depth

Clicking on Charted Depth to enter a new value of Charted Depth. This may be the depth on a chart or it may be a known charted depth of harbour etc. This is useful if you need to find the times when your vessel would be afloat.

Settings|Draught

Clicking on Draught to enter a new value of Draught. The system then will recalculate the Under Keel Clearance. This can be used to answer the question "When could I sail over a sand bank in a vessel of a given draught?". The draught is reset throughout AutoTide.

Settings|Under Keel Clearance

Clicking on Under Keel Clearance causes AutoTide to recalculate the Charted Depth. given the tidal prediction. This is useful if you know the clearance at a given time (for example you have an echo sounder reading) but you don't have the charted depth to enter into the Tide Table routine.

For example, you may want a list of times of when you can clear a given sand bank, but you do not know its charted depth. To solve this problem follow the following steps

1. Ensure your echo sounder reading is set relative to the keel.
2. Sail over the sand bank at High Tide following the usual safety precautions.
3. Enter the time and nearest tidal location into AutoTide.
4. Click on Under-Keel Clearance and enter its value as indicated by the echo sounder.
5. Note down the Charted Depth given by AutoTide for the sand bank.

Settings|Plot Duration

Use this to change the number of days plotted in the graph.

Settings|Graph Origin

The graph origin is the time at which the graph starts. This can be set to Automatic or Midnight from the Settings Menu. When set in Automatic mode AutoTide chooses the previous sensibly rounded value, when set at Midnight the graph always starts from the Midnight.

Settings|Graticule

AutoTide can be set to produce a graph with or without the time graticule (the vertical white lines) by using the Settings Menu.

The Tidal Height Graph - Time Cursor

The time cursor is a vertical green line in colour (or vertical long dashed line in mono). It operates in two modes.

1. Automatic. In this mode it appears as a dotted line and it moves with the selected clock time on the Main Screen.

2. Manual. In this mode it appears as a dashed line and is used for reading values off the graph. To change the cursor to Manual click on it with the left mouse button. To move the cursor simply drag the vertical cursor line with the mouse to the time you require. The display at the top of the graph continually updates the values as the cursor is moved. If you are unsure of how to drag the cursor line, follow these more detailed instructions. Move the mouse pointer to the cursor line - the pointer will change to left and right arrows. Press and hold the left mouse button whilst moving the mouse left or right to the desired time. Releasing the left mouse button will leave the text boxes updated with the tidal height and clearance data.

The time cursor can be returned to automatic mode by clicking on it with the right mouse button.

The Tidal Height Graph - Print

Use the **Print** menu option to print this window to the default printer. This menu option has two items on its pull down menu - **Monochrome** and **Colour**. Use **Print|Monochrome** for printers with black only, and **Print|Colour** for colour printers.

The Tidal Height Graph - Help

Help. This menu option provides the user with help, switched to the appropriate topic.

The Tidal Height Graph - Leaving this window

Exit. This menu option returns the user to the Main Screen.

The Tidal Stream Graph - Introduction

This is accessed from the main screen using the Graph button. Clicking this button causes the graph to be drawn together with its associated textual data.

The graph displays the tidal stream speed while the stream speed and direction are listed in a scrolling text display.

The vertical axis of the graph shows the speed of the tide. On the right hand side an arrow indicates the direction of the stream at the cursor.

Functions include:

Zoom

Settings

Print

Help

Exit

Cursor Line - The dotted green vertical line.

Note: To plot the previous graph click on the button marked "<" and to plot the following graph click on the button marked ">".

These options are listed on the following pages.
Use the >> button to advance page by page.

The Tidal Stream Graph - Setting the Graph Scales

Use the **Zoom** menu option to zoom in or out of the graph.

The Tidal Stream Graph - Settings Menu

Settings|Plot Duration

Use this to change the number of days plotted in the graph.

Settings|Graph Origin

The graph origin is the time at which the graph starts. This can be set to Automatic or Midnight from the Settings Menu. When set in Automatic mode AutoTide chooses the previous sensibly rounded value, when set at Midnight the graph always starts from the Midnight.

Settings|Graticule

AutoTide can be set to produce a graph with or without the time graticule (the vertical white lines) by using the Settings Menu.

The Tidal Stream Graph - The Time Cursor

The time cursor is a vertical green line in colour (or vertical long dashed line in mono). The stream speed and direction at the cursor are written above the graph and the direction is used to drive the direction indicator. The cursor itself operates in two modes.

1. Automatic.

In this mode it appears as a dotted line and it moves with the selected clock time on the Main Screen.

2. Manual.

In this mode it appears as a dashed line and is used for reading values off the graph. To change the cursor to Manual click on it with the left mouse button. To move the cursor simply drag the vertical cursor line with the mouse to the time you require. The display at the top of the graph continually updates the values as the cursor is moved. If you are unsure of how to drag the cursor line, follow these more detailed instructions. Move the mouse pointer to the cursor line - the pointer will change to left and right arrows. Press and hold the left mouse button whilst moving the mouse left or right to the desired time. Releasing the left mouse button will leave the text boxes updated with the tidal stream speed and direction data.

The time cursor can be returned to automatic mode by clicking on it with the right mouse button.

The Tidal Stream Graph - Print

Use the **Print** menu option to print this window to the default printer. This menu option has two items on its pull down menu - **Monochrome** and **Colour**. Use **Print|Monochrome** for printers with black only, and **Print|Colour** for colour printers.

The Tidal Stream Graph - Help

Help. This menu option provides the user with help, switched to the appropriate topic.

The Tidal Stream Graph - Leaving this window

Exit. This menu option returns the user to the Main Screen.

The Anchoring and Mooring Calculator - Introduction

The Anchoring and Mooring Calculator works out two quantities which are vital when attempting to select an anchorage. These are:

1. The echo sounder reading **REQUIRED NOW** in order to avoid grounding on the next low tide.
2. The amount of warp required for anchoring on the next high tide.

Calculating these quantities by hand can be an involved and time consuming process and yet often has to be done quickly as an anchorage is being surveyed.

In order to calculate these quantities AutoTide first locates the next high and low tides, and then calculates the rise and fall in the tide using the height of the tide at the cursor position as its initial value. Then AutoTide works out the echo sounder reading **REQUIRED NOW** - this is given by the Fall in the Tide plus the Echo Sounder Offset.

The depth of water at the next high tide is given by sum of:

The rise in the tide

The draught and

The echo sounder reading minus the echo sounder offset. offset.

This depth at high tide is then used to calculate the amount of warp required using a simple multiplier for the length. Two multipliers can be used - depending on the type of warp used. AutoTide can handle an anchor warp of mixed construction using chain and warp and will utilise the multipliers appropriately.

The Anchor Calculator - Length of Anchor Chain and Warp

<u>LABEL</u>	<u>DESCRIPTION</u>
CURSOR	Height and time of tide at the cursor
Next Low Tide after the cursor	Height and time of tide at the low tide following
Next High Tide following after the cursor	Height and time of tide at the high tide
Echo Sounder Offset	As entered under settings on main screen.
Draught	As entered under settings on main screen.
GROUNDING	
Fall in Tide	Calculated from tide at CURSOR - Low Tide
Echo Sounder Reading	Required Offset + Fall in Tide
ANCHORING	
Rise in Tide	Calculated from High Tide - Tide at CURSOR
Echo Sounder Reading Now	To be entered by the user.
Depth of Water at High Tide	Rise + Draught + ESR - Offset

Length of Chain Available.

Enter here the maximum length of chain available. AutoTide will remember this value for when you use it next time.

Length of Warp (Rope) Available.

Enter here the maximum length of warp (rope) available. AutoTide will remember this value for when you use it next time.

Length of Warp / Chain Required.

These are display only text fields, giving the amount to use.

If there is insufficient length of Chain or Warp (Rope) on board a warning message appears on the Anchor Calculator Window.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Anchor Calculator - Formulae

You can change the multiplication factors used in the anchor warp calculation by clicking this button. The Anchor Formulae Window will then appear.

The Anchor Formulae

This is activated from the Anchor Calculator. Enter here the numerical multiplier for Chain and that for Warp (Rope). Suggestions range from 3 or 5 for Chain and from 5 to 8 for Warp depending upon the expected weather conditions. Click **OK** to enter the new values entered, or press **CANCEL** to disregard all the data entries you have made.

NB On registered versions of AutoTide you do not have to re-enter this information each time AutoTide is used, it is automatically saved and re-used whenever AutoTide is run.

The Information Display

This display uses an extra large font, so you can see it from a distance, i.e. from the cockpit for example. The display is activated from The Tidal Height Graph.

The Information Display also contains an Alarm feature which is activated when the Under Keel Clearance is below a given value. This Alarm feature is on the pull down menu marked Alarm.

The Information Display will only operate when the Use Clock check box has been activated on the Main Screen (since it need a continuous update of the time to activate the alarm).

The Information Display - Alarm

The Alarm Settings Window is activated by clicking on the **Alarm** menu option.

The alarm can then be set so that it sounds when the Under Keel Clearance falls below a given value.

Alarm Settings Window

The alarm sounds when the Under Keel Clearance falls below a given value.

To set the minimum clearance enter the value in the appropriate field. Remember the figures is positive, that is "1.5" means "Sound the alarm when the Under Keel Clearance is less than 1.5 metres"

To set the alarm, click on the **set alarm** check box . When you do this an alarm clock is displayed on the Information Display informing the user that the alarm is set.

To test the computer's speaker click the test button.

The Streams Database

This facility is activated by clicking the button labelled Streams Database on the main start-up screen. **The Streams Database** enables the user can create and maintain their own tidal streams databases. The source data for the tidal streams should consist of the speed and direction at hourly intervals for spring and neap tides relative to the high water tide at a reference port. This type of data can be obtained from Almanacs and also Nautical Charts. (Most UK HO Charts contain text insets listing this information in a suitable format.)

NB Files AD2045 and AD2099 are provided with AutoTide 3 as examples of such databases.

How to:

[Create a New Database](#)

[Edit a Tidal Stream Record within a Database](#)

[Delete a Tidal Stream Record from a Database](#)

[Insert a Tidal Stream Record into a Database](#)

Please click on any of the following for a more detailed description.

Menus

[File](#)

[Help](#)

Buttons

[Add](#)

[Insert](#)

[Delete](#)

[Abandon Changes](#)

[Update Record](#)

Streams Index

[List of Stream Records](#)

Data

[Record Name](#)

[Location](#)

[Reference Port](#)

[Speed and Direction Units](#)

[Spring and Neap Tide Speed](#)

How to Create a New Database

To create a new database use the following steps:

Click File|New and enter:

1. Record name
2. Position in latitude and longitude
3. Reference port
4. Speed units
5. The data itself which should consist of separate entries from -6hrs to + 6hrs of
Direction in degrees
Spring tide speed
Neap tide speed
6. Click on Update to enter each record.
Repeat steps 1 to 6 until all records have been entered.

Click File|SaveAs to save the database.

Note You can edit any record by selecting it in the index, and then over typing the data.

How to Edit a Tidal Stream Record within a Database

To change a tidal stream record within an existing database follow the following steps:

1. Click File|Open and select the database name:
2. Select the record you wish to change by clicking on it in the text box on the left.
3. Change the data.
4. Click on Update Record
5. Click File|SaveAs to save the database.

How to Delete a Tidal Stream Record from a Database

To delete a tidal stream record from an existing database follow the following steps:

1. Click File|Open and select the database name:
2. Select the record you wish to delete by clicking on it in the text box on the left.
3. Click on Delete Record. The record should disappear from the stream index display.
4. Click File|SaveAs to save the database.

How to Insert a Tidal Stream Record from a Database

To insert a tidal stream record into an existing database follow the following steps:

1. Click File|Open and select the database name:
2. Select the place in the index where you wish the new record to be placed.
All the records from this record onwards will be moved down one.
3. Click on Insert Record.
The records from the selected one onwards will all be moved down.
4. Enter the new data.
5. Click File|Save to save the database or File|SaveAs to rename it.

Streams Database : Menus

The menu in the streams database are:

- File|New** Makes a new database. The user will be asked for the new name on saving.
- File|Open** Opens an existing database.
- File|Save** Saves the database keeping the same name.
- File|SaveAs** Allows the user to change the name of the database if required.
- File|Exit** Leave the streams database and returns to AutoTide.
- Help** Provides On-line Help about Streams Data.

Streams Database : Operating Buttons

- Add** Adds (Appends) a record.
Use this button to add records at the end of an existing database.
- Insert** Inserts a record at the selected point.
All records including this one will be moved down in the index in order to make space for the new record.
- Delete** Delete currently selected record.
The deletions are to the record structure in the computer memory - not on file. If you have deleted a record in error you have one last chance to abandon this deletion - simply don't save any of the changes you have made when you go File|Exit.
- Abandon Changes** Abandon text entries to current record.
Use this option to abandon the entries you have made to this record. The record data will be returned to the state it was in when you first selected this record.
- Update Record** Apply text entries to current record.
Use this option to update the entries you have made to this record. Note: They still have not been saved as a file until you go to the file menu and use File|Save.

Streams Database : Selecting a Record.

You can select a record within a tidal stream database by clicking on the index of records. The arrow keys will also advance or decrease the selected item. If the selected record contains data it will be displayed on the appropriate text areas in the record display. The record display also shows which record is selected.

Streams Database : Entering Data

Each stream record consists of:

Record Name A unique name for each record of any length. Letters A to Z are often used as names. These names subsequently appear as the record name on graphical and tabular output.

Location Enter here the position of the stream record. AutoTide will accept many different formats for the latitude and longitude. You can use the space as a delimiter to enter degrees. As a safety check, when you click on the next textbox AutoTide will re-display its interpretation of the position entered, Example
Enter: 59 32.12n Display: 59 32.12' N

Reference Port Select the reference port from the world list of AutoTide locations.
You can select the port either by scrolling down (quite a lengthy process!) or by using letter selection. To do this pull the list down and enter the first few letters of the place name. The list box will find the first occurrence of these letters in the list. Simply click on this place to select it. Once selected this will be the default value for the following record.
Warning: There are many ports which share the same name. You should ensure that you have chosen the correct port by checking its latitude and longitude.

Speed Units Select here the speed units of the data to be input. These are Knots, Miles Per Hour, Kilometres per hour or meters per second. Once selected this will be the default value for the following record.

Followed by thirteen hourly records of:

Direction Data An angle between 0 and 359 degrees. It is reinterpreted by AutoTide and re-displayed as a safety check.

Spring and Neap Tide This should be the speed at a Mean Spring and Neap Tide
A number between 0 and 327 and having up to two decimal places.
It is reinterpreted by AutoTide and re-displayed as a

safety check.

Shortcut Keys

These are keys you can use to operate the system directly from the keyboard. It is generally quicker to use these keys than to use a mouse or tracker ball, especially if you are operating the system on board a vessel which is moving around in a non-inertial fashion.

Buttons and Menu Options

To activate a button or menu option use the Alt Key together with the letter which is underlined on the button or menu.

Check boxes, and radio-buttons.

Operate these controls by using the TAB key to move the focus to that option. The focus is shown by a dotted line which surrounds the activated option or a cursor, depending on object type. You can then use the ENTER key (or sometimes SPACEBAR) to change the state of the chosen option. See your Microsoft Windows manual or use win help for more details.

Accuracy of Tidal Predictions

Any tidal predictions either in printed form or on a computer screen are just that, predictions irrespective of their source. As such, there may be considerable discrepancies between predictions using different mathematical methods. One method may produce more accurate results in one location, and another method may be more appropriate in another. Furthermore, at high and low tide the height is changing slowly, so discrepancies in high and low tide times may occur between differing methods when there is actually only a small difference in height between the tidal curves.

AutoTide uses a variation of the harmonic method developed by the UK Hydrographic Office - fully described in the Admiralty Manual of Tides 1941 published by HMSO UK. This method essentially uses only those tidal constituents which fall within a set of 2 frequency bands of around one per day and 2 further bands around twice per day. The four corresponding harmonic constants are stored for each location in the database file. AutoTide can also utilise fortnightly variations in mean-level, the MSf constituent. However, even this extended method is not always appropriate, since there is an inherent assumption of mathematical linearity in the harmonic method. The bulk movement of water in shallow areas is essentially a non-linear physical phenomenon, thereby limiting the accuracy of this method in estuaries and shallow coastal regions.

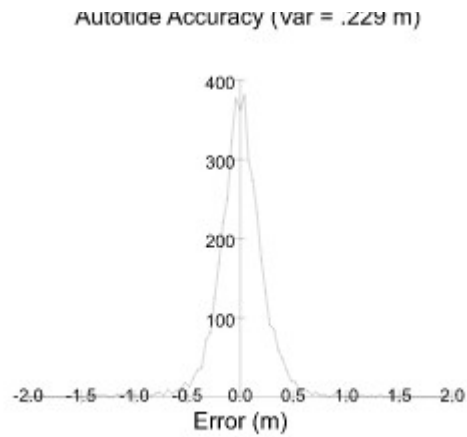
In any event greater discrepancies in height frequently arise from more unpredictable sources. These include the effect of storm surges, of friction between wind and sea, and the effect of atmospheric pressure. Taking just the latter effect - a change in atmospheric pressure of just 34 millibars can cause a difference in height of the tide of around 0.3m.

The user should therefore use any tidal predictions with extreme caution

See next page for statistical comparison of AutoTide with UK HO Predictions for Standard Ports.

Comparison between AutoTide and other methods

Discrepancies between the AutoTide program and the published UK Hydrographic Office predictions have been tested by comparing approximately 4000 randomly selected tidal height predictions against those listed for standard ports in the ADMIRALTY TIDE TABLES Volume 1 1995 (NP201-95). The results are indicated in graphical form below.



Charted Depth

The depth of the sea bed below chart datum.

Chart Datum

A level which has been standardised upon in the region of a given location.

Draught

The vertical distance between the lower extremity of the vessel and the water-line

Under Keel Clearance

The vertical distance between the lower extremity of the vessel and the sea bed.

Default Printer

This is the printer usually used by windows programs. To make changes to the default printer or to change the printer, follow these steps.

1. Go to the MAIN window group,
2. Select the Main Screen icon
3. Choose Printers.

Linden Software Limited

AutoTide was conceived and written by Steve Taylor PhD MInstP MIEEE on behalf of Linden Software Limited. The author has been studying the field of tidal prediction for many years.

Linden Software Limited is a specialist technical consultancy set up by the author which provides services in the marine computing and electronics fields. To date we have written and supplied marine simulator software, custom radar simulation hardware and software, have created nautical chart digitising software, and have provided data processing facilities within the field of digital cartography. Our clients have included educational establishments, industry, financial and government organisations. We also provide technical advice, and have undertaken project evaluation and feasibility studies (technical audit) in order to assist in management decision making. If you think you may need our services, please phone Steve Taylor on 01482 840036 for further information of services available.

