

Conventional time clocks have a 12 hour cycle, with 1 hand for hours, another for minutes.

Tide clocks have a single hand, and a cycle of 12 hours 25 minutes, coinciding to an average time of about 6 hours 12 minutes between high and low tides. High tide is indicated when the hand is at the '12 o'clock' position, low tide is indicated with the hand at the '6 o'clock' position.

A tide clock is not indicating 6 or 12 o'clock of course. It is merely a convenient reference point on the dial, showing us when our local tide is high or low. 12 is marked as High, 6 is marked as Low. However, the hour markings on the dial between the High and Low tide points do show us the number of hours since the last high or low tide, and the hours before the next high or low tide. A tide clock which has been initially set correctly will continue to display tide predictions quite accurately, requiring resetting only at intervals of about 4 months, depending upon the location.

A brief explanation of how the tidal cycle works

The Moon is the major cause of the tides. The 'lunar day' (the time it takes for the Moon to re-appear at the same place in the sky) is 24 hours and 50 minutes.

New Zealand, and many other places in the world, have 2 high tides and 2 low tides each day. These are called semi-diurnal tides.

Some areas of the world (eg Freemantle in Australia), have only one tide cycle per day, known as diurnal tides. A tide clock is not really suitable for those areas.

Other areas, such as much of the west coast of America, have a mixture of diurnal and semi-diurnal tidal forces. Again, a tide clock is of less use in those areas.

Our website, www.cruisingelectronics.co.nz has site links with detailed world tidal information.

The tide clock hand rotates once every 12 hours and 25 minutes (twice each lunar day).

This equals 1/2 the average period of the moon orbit around Earth, but there are many other factors that can make the day-to-day tides a little earlier or later than the tide clock shows.

Each user must determine these conditions for his own locality and to take them into account.

The Sun also affects the tides, but has less than half the influence of the moon. When Sun, Moon and Earth are lined up, as they are at times of new moon and half moon, their influence combines and high tide is higher than normal and low tide is lower than normal. When the sun and the moon are at right angles, as they are at the first quarter and last quarter of the moon, the sun cancels some of the moon's effect, and the range of tide is smaller than normal. Also, at these times the sun will make the tides somewhat earlier or later than average. This is why it is so important to first set your tide clock on the day of a full moon, as the moon has the dominating effect on the tides.

Other Factors

There are actually 2 tidal cycles - a twice-daily cycle and a once-daily cycle. On a tide when the 2 cycles help each other, high tides will be higher and low tides lower. On the next tide, when they conflict, the tidal range will be smaller. The relative strength of these 2 cycles varies from week to week and also varies from one place to another.

Abnormal atmospheric pressure can temporarily affect the time and height of tides.

A difference of 30 mB (1 inch) in barometric pressure will cause about 300mm (1 foot) difference in sea level. Strong onshore winds will also cause a temporary increase in sea level. Both of these effects will change the times of low and high tides as well.

Tides in the lower portions of rivers will be affected by the changing volume of the river flow.

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