

IMPORTANT DATES FOR THE DIALIST, and thus a few rules of thumb:-

February 11th	eot max: sun is slow and the EOT is +14 minutes 12 seconds
March 21	vernal equinox
April 15	eot = 0
May 13th and 14th	an eot peak: sun is fast, so the EOT is -3 minutes 39 seconds
June 15	eot = 0
June 21	summer solstice
July 25th and 26th	an eot peak: sun is slow with an EOT of +6 minutes 30 seconds.
September 1	eot = 0
September 23	autumnal equinox (some use September 21 by convention)
early November	eot max: sun is fast and the EOT is then - 16 minutes 22 seconds
December 21	winter solstice (some use December 22)
December 25	eot = 0

The use of the 21st for the solstices and equinoxes is often used as an approximation, and easy to remember. However the actual date may vary based on the year, leap year, and so on.

In the year 1246 the EOT smaller deviations were both 4 minutes 58 seconds, and the maxima were both 15 minutes 39 seconds. The February minimum is shrinking about 12 seconds a century, the May maximum is shrinking by about 9 seconds a century, the July minimum is growing about 13 seconds a century, and the November maximum is growing by about 5 seconds a century.

LIMITING, UNUSABLE AND USABLE HOURS ON A DIAL PLATE

When designing a sundial, there is no point in marking up lines that can never be used. If the dial is large then time and materials are wasted as is real estate on the dial plate because the shadow of the style or nodus will never touch those unusable hours or calendar information. For small dials, it is better to eliminate unusable space and increase the size of the remaining hour lines and calendar information, thereby increasing their accuracy.

Displayable hours depend on latitude and dial type. For example, on the equator every day is an equinox thus the most a dial can display is 6 am to 6 pm local apparent time (LAT). At the poles, night lasts months, day last months, or somewhere in between. Thus a horizontal dial can display 24 hours. Software with shadow simulators can help visualization of usable shadow, one such example is SHADOWS, a software program sometimes used by the author but not affiliated with this book. In summary form, with times being local apparent time, the rules of thumb are:-

Armillary Equatorial Horizontal	}	can display from sunrise to sunset, however, an armillary dial plate can interfere with itself near the equinox, and equatorial dials may indicate nothing at the equinox
Vertical facing the equator		6 am to 6 pm
Vertical facing the pole		6 pm to 6 am but not after the latest sunset nor before the earliest sunrise
Vertical decliner		12 hours maximum not hours above the horizontal line for the nodus roughly one hour shift for each 15 degrees of wall declination
Recliners		requires deep thought
Meridian east facing		sunrise to noon
Meridian west facing		noon to sunset
Polar dials		6 am to 6 pm