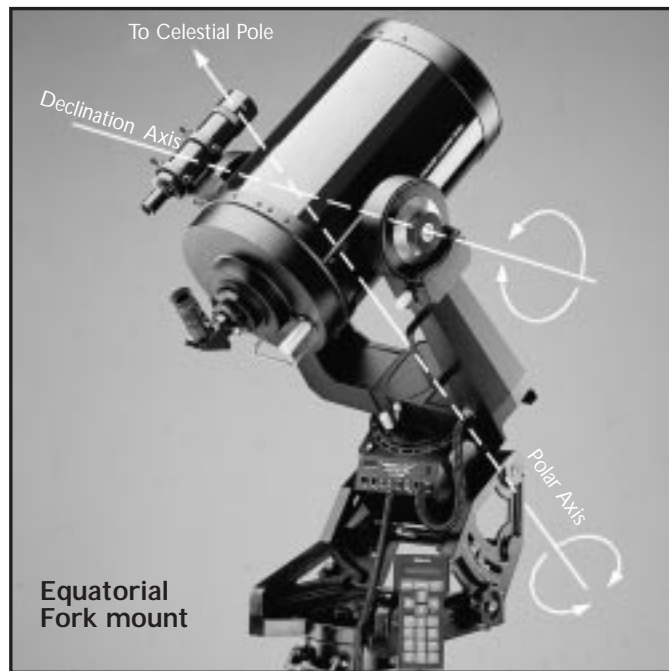
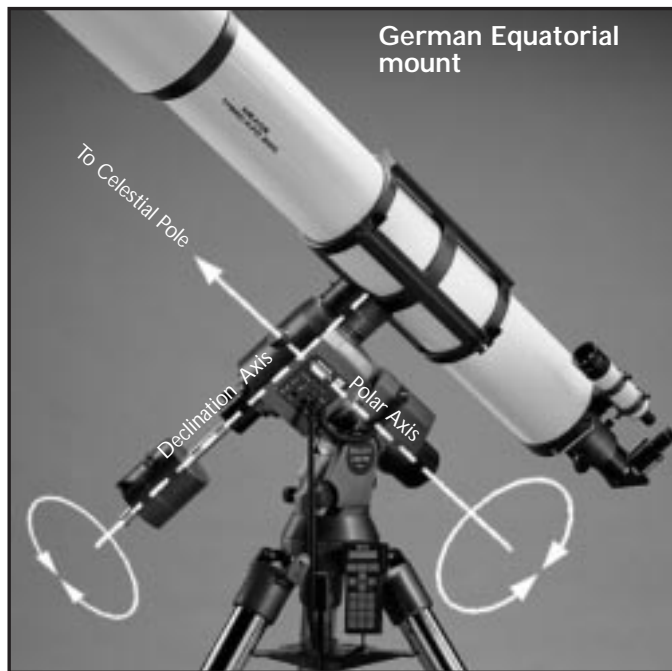


The Equatorial Mount



The equatorial mount is a refinement of the basic altazimuth mount designed to overcome the tilt and rotation of the Earth by aligning the axis of the instrument with the axis of rotation of the Earth – the polar axis. The Objects can be tracked accurately by rotating the telescope around this axis alone (called the Right Ascension), holding the object stationary in the telescope's field of view indefinitely.

Another advantage of the equatorial mount is that it can be motorised to follow an object automatically and near effortlessly.

An equatorial mounting is essential for any form of astrophotography and makes almost any serious observing so much easier.

There are two types of equatorial mountings available: Fork mountings and German mountings.

Fork mountings are ideal for Cassegrain telescopes and large Newtonians. The fork supports the telescope on bearings set between two short prongs that permit full movement in declination, while the base of the fork is on a circular base that rotates. When the whole assembly is tilted to align with the polar axis, the circular base gives movement in the right ascension.

Fork mountings are generally quite light in weight, compact and easily portable.

The German equatorial mount is shaped like a letter T with the telescope mounted on one end of the cross bar and a counterweight on the

other. The pole axis (Right Ascension) is on the upright. This type of mount has been popular with many amateur astronomers and can accommodate longer-tube instruments more readily than the fork mounting. It is the only practical mounting for small refractors. Although it allows unhindered access to most parts of the sky, it cannot sweep continuously across the whole horizon. When it nears the meridian, it has to be moved to the opposite side of the mounting and realigned on the target object. While this drawback is merely inconvenient for normal observing it makes long exposure photography impossible as not only is exposure interrupted, but the image's orientation in the field of view is also rotated.

Polar Alignment

A telescope with an equatorial mount cannot effectively track an object unless the mount's polar axis is aimed towards the northern sky. As the Earth rotates, the sky appears to rotate in the opposite direction. The sky's pivot point is an imaginary spot called the north celestial pole, directly above the North Pole. (The star Polaris is used as the celestial pole target.) For a telescope to track properly it, too, must rotate around an axis aimed at this pole. Rigorous, time-consuming methods for precise alignment are necessary only for advanced astrophotography where very long exposures are needed. For general observing and basic photography, an accuracy of within one or two degrees of the pole will be sufficient. The simple method is to set up the telescope on its mount and tripod so that it is reasonably level, adjust the angle of the altitude, or latitude setting on the wedge to match your latitude (the UK lies between 50° N and 60° N.) With the telescope's declination circle set at 90°, use the finder scope to locate and centre the pole. Do this by moving the whole tripod or by using the fine azimuth adjustments on the wedge. Do not alter the tube's declination or right ascension.

