

POLAR ALIGNMENT

The following describes the process to be followed in polar aligning an equatorially-mounted telescope using the star drift method.

- 1 Approximately align the mount in azimuth by using a compass to point the R.A. axis towards true south, that is, about 11 degrees east of magnetic south.
- 2 Set the altitude to local latitude (27.5 degrees for Brisbane) using the altitude scale on the mount if it has one and if the mount has been accurately levelled, otherwise use a spirit level and an adjustable set square or a pre-cut template.
- 3 Insert a cross-hair eyepiece in the telescope and, using the slow motion controls (or motor-driven fast slew), align the cross hairs with R.A. and declination movements (that is E-W and N-S).
- 4 Select a star about 15 degrees above the horizon due east and centre it in the eyepiece.
- 5 While watching the star in the eyepiece, gently nudge the rear of the telescope towards the north. The direction that the star moves is north in the eyepiece. Remember this direction.
- 6 Re-centre the star on the E-W cross hair (the cross hair along which the star drifts if the drive is switched off) and note which way the star moves in a N-S direction. Make only R.A. corrections to keep the star more or less at its initial location. If the star drifts to the north, the altitude is set too low. If the star drifts to the south, the altitude is set too high. Adjust the altitude and re-centre the star. Repeat until there is no drift in about a five-minute period.

The above can be done using a star above the western horizon, when the corrections are reversed. That is, if the drift is to the north, the altitude is set too high.

- 7 Select a star near the celestial equator at the meridian and centre it in the eyepiece. Re-establish the direction of north in the eyepiece then, without making declination corrections, note the direction the star drifts in a N-S direction. If the drift is to the north, rotate the mount in azimuth towards the west. If the drift is to the south, rotate the mount towards the east. Re-centre the star and repeat until there is no drift in about a five-minute period.

For straight observation use, this will yield a sufficiently well aligned set up, but for photographic or CCD imaging, steps 4 to 7 should be repeated until there is no N-S drift in a ten-minute period. One additional cycle will usually suffice. Even if the mount has been polar aligned using a built-in polar alignment scope, it is advisable to run a star-drift check in case the wrong star has been selected or in case something is misaligned.

There is no need for the mount to be level. The only thing that matters is that the R.A. (or polar) axis points to the south celestial pole.