

Polar Alignment Using the Drift Method

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1 Introduction

Over the years I have tried a lot of methods for polar alignment including the classic drift method which this article describes.

Today I use a method based upon the AlignMaster software which is described in my article “Polar Align a Sky-Watcher EQ6” also available on www.astrosoft.co.uk.

I take no credit for this description of the method of drift Alignment – I have tried a few and this is simply by far the best way of documenting the method that I have found and tried.

The following descriptions will work for any fork mounted SCT (e.g. Meade or Celestron) on an equatorial wedge or for an Equatorial mounted scope. In the descriptions below I have given examples for a Meade LX200 and a Sky-Watcher EQ6 mount.

The adjustments to be made all depend upon your observations of a star and its North / South and East / West movement as viewed through a guiding eyepiece, CCD or Webcam. Depending upon the number of reflecting surfaces (mirrors) in your scope and use of a diagonal, images (and hence motion) may be upside down and/or backwards left to right.

So which way is NESW when viewed through your eyepiece / CCD / Webcam?

If you are unsure which direction the star moves for North/South and East/West through your eyepiece, CCD or Webcam then observe a star and use the handset slew controls to determine the direction; for example to check which way in the eyepiece is North, use the South control to slew the scope South and the direction that the star appears to move is North, slew the scope West and the direction that the star appears to move is East.

Fig. 1 below shows a setup on a Meade LX200 using an illuminated 12mm guiding eyepiece and a diagonal. Fig. 2 is showing a star positioned ready for monitoring (it’s a question of preference how you position the star relative to the eyepiece reticle) but ensure that the cross hairs are aligned with the North/South and East/West motion of the star when using the scopes slew controls. If using a CCD or Webcam then use software such as FireCapture or SharpCap which allows you to superimpose a reticule on the display.



Fig. 1 – Diagonal & eyepiece set up used for Polar Alignment

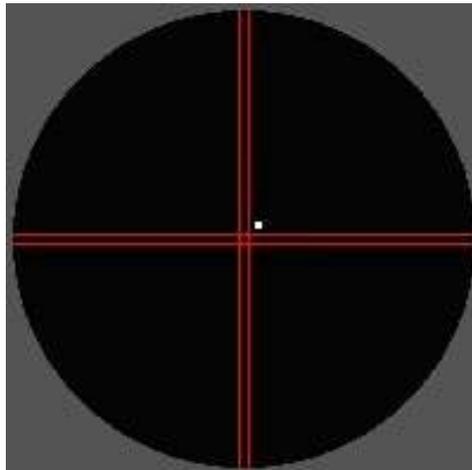
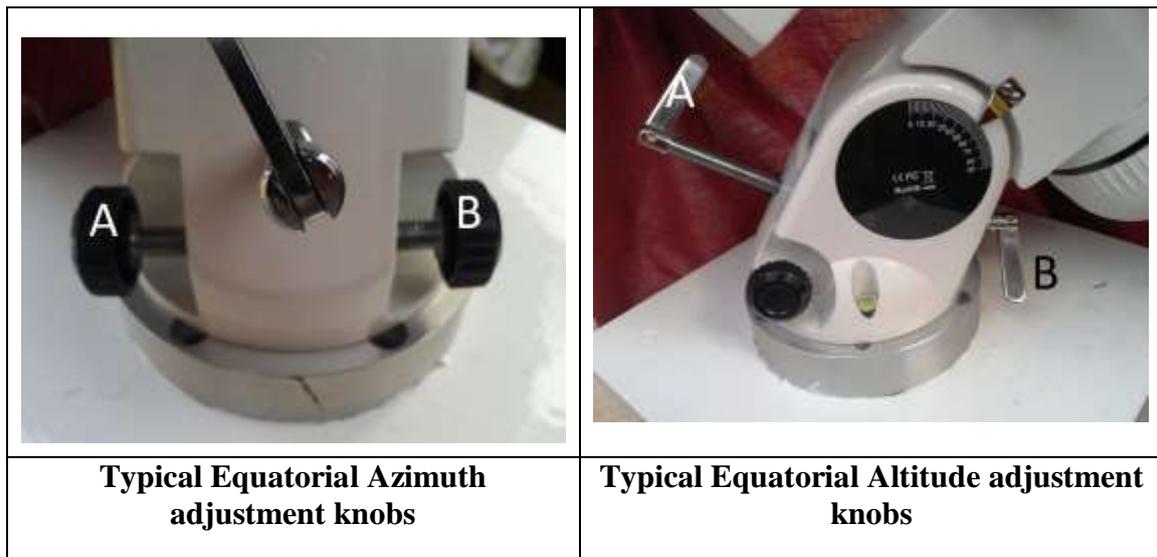
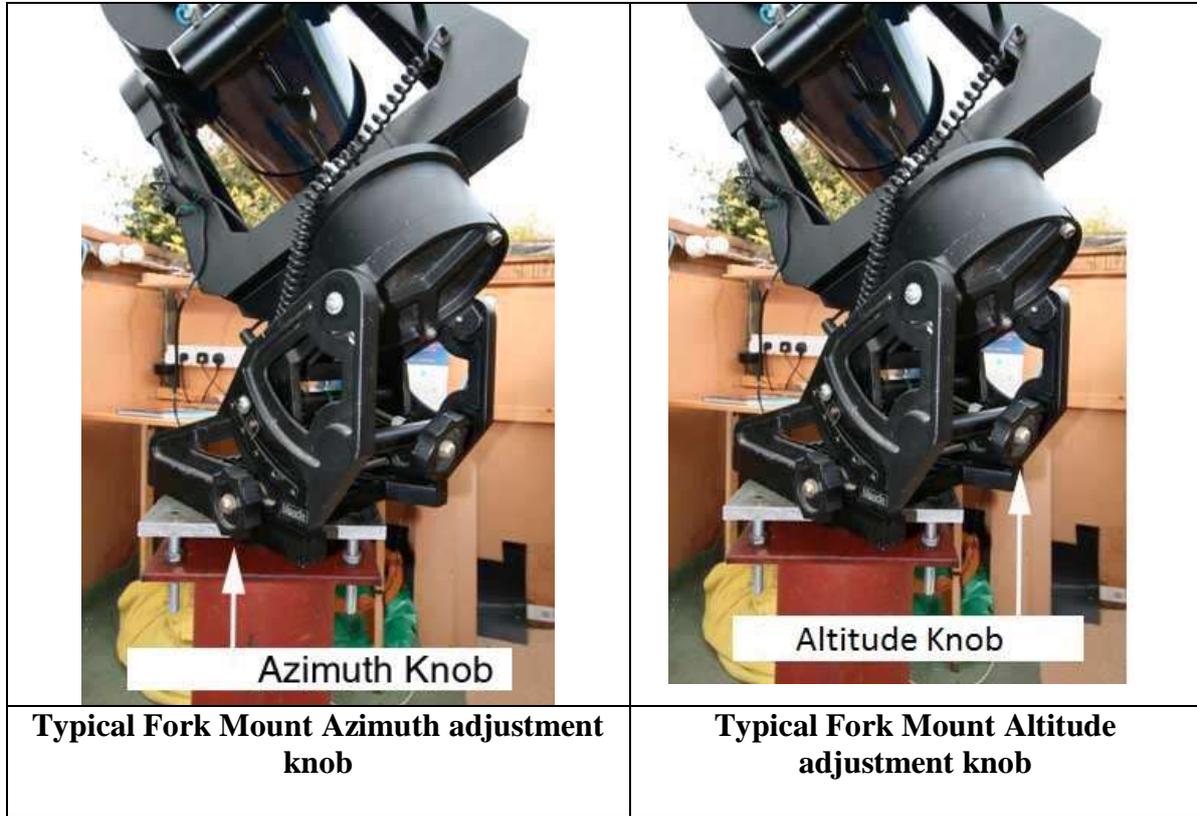


Fig. 2 – Guiding eyepiece view with star positioned

2 Azimuth and Altitude Adjustment

The method below tells you to make some adjustments via your 'Azimuth' and 'Altitude' knobs. In the case of a Meade Super Wedge and Sky-Watcher EQ6 these are the following knobs:



3 Polar Alignment – Drift Method

1. Find a star near the meridian (within ½ hour RA of the meridian) and about 0 degrees declination (within +/-20 degrees will do) and rotate the guiding eyepiece so that the cross hairs are aligned with the north-south motion of the telescope when using the scopes North/South controls. Now centre the star on the cross hairs of your guiding eyepiece.

Watch for North/South (i.e. up/down) drift only; you may guide in RA only.

- If the star drifts **North** in the cross hairs, the azimuth alignment is West of North and hence use the mounts **azimuth** knob to move the mount to the **East**.
 - If the star drifts **South** in the cross hairs, the azimuth alignment is East of North and hence use the mounts **azimuth** knob to move the mount to the **West**.
 - For good alignment repeat until you have no drift for 5 minutes.
2. Find a star within 20 degrees above eastern horizon and about 0 degrees (within +/- 20 degrees) declination.
 - If the star drifts **North** in the cross hairs, the altitude alignment is too high and hence use the mounts **altitude** knob to **lower** the alignment (i.e. reduce the altitude reading on the mounts altitude scale).
 - If the star drifts **South** in the cross hairs, the altitude alignment is too low and hence use the mounts **altitude** knob to **raise** the alignment (i.e. increase the altitude reading on the mounts altitude scale).
 - For good alignment repeat until you have no drift for 5 minutes.

Summary

| Star near Meridian | Star near Eastern Horizon |
|--|---|
| If star drifts North , move azimuth East | If star drifts North , move altitude Lower |
| If star drifts South , move azimuth West | If star drifts South , move altitude Higher |

3.1 Notes

You may use a star in the west, but adjustments must then be reversed as follows:

- If star drifts **North**, move altitude **Higher**
- If star drifts **South**, move altitude **Lower**

Drift in less than 5 seconds at 200X means alignment is probably 10 or more eyepiece fields off on azimuth; give the knob a good crank! If no drift in 30 seconds or so then alignment may only be 1 or 2 eyepiece fields off.

Remember: for good polar alignment you must have no drift for 5 minutes.