



Cornwall Astronomy Society - Quick guide to using setting circles on an equatorial mount.

The following steps should be taken once your equatorial mount has been levelled and polar aligned. Make sure that as you rotate your mount in Right Ascension (RA) through 360° the RA setting circle moves with it (i.e. it doesn't "stick" anywhere).

Before your observing session, plan what you want to find so that you are prepared with a list of your faint objects and, for each one, identify a nearby bright star (same or neighbouring constellation is close enough) that you can use as a "reference star" You will need the RA and Dec coordinates of both your chosen faint objects and their reference stars before you start.

1. Find the bright (reference) star and centre that star in your telescope eyepiece.
2. Check the declination scale - it should read the correct declination (or very close to) for the bright star you have centred in your eyepiece (see notes a and b below), calibrate the dec scale as necessary if your mount allows it.
3. Rotate the RA setting circle to read the correct setting for that bright star.

[Your mount is now calibrated to the celestial coordinates of the sky.](#)

4. Unlock the declination clutch and move the scope until the declination scale reads the correct declination for the faint object you want to find and then lock the declination clutch.
5. Unlock the RA clutch and move the scope until the RA scale reads the correct RA for the faint object you want to find.
6. You should now be able to see the faint object you're looking for in the eyepiece, simply make small adjustments to centre the faint object in your eyepiece.

[Please see the Cornwall Astronomy Society You Tube video for practical demonstrations.](#)

Notes.

- a. If the declination is more than 2 or 3 degrees out when you've centred your bright star the most likely explanations are;
 - a. Your scope is not pointing at the star you think it is.
 - b. Your mount is not well polar aligned.
 - c. Your declination scale is not correctly calibrated.
- b. Some mounts will not allow you to calibrate the declination scale - if you can't calibrate it, then use the same offset when you're moving your scope to your faint target but this should not be more than a couple of degrees in any case.
- c. When finding your bright "reference star" and moving the scope to your faint target, use the eyepiece that will give you the widest (longest focal length/widest field of view combination) coverage of the sky to give you the biggest margin for error that you can.
- d. It is better to take your coordinates from reliable sources (e.g. computer applications or publications that state RA and Dec coordinates rather than trying to work them out for yourself from star charts/maps - using published coordinates minimises that opportunities for error.
- e. Try a few "dry runs" indoors in good light so you can get familiar with the technique and controls.
- f. A useful practice is to use setting circles to move between bright stars within constellations - if you don't see the star you're trying to find in your eyepiece using coordinates, it's easier to work out where you went wrong!