DRIFT ALIGNMENT - R.A. CORRECTION METHOD

Classic Drift Align minimizes only Dec. drift over most of the sky. However, that results in significant R.A. drift at the zenith. Drift in R.A. increases the closer you are to the Earth's equator. Why was this classic method of drift align developed? It was developed this way because in times past most equatorial mounts had only right ascension drives and no way to adjust declination drift. If you could eliminate Dec. drifting, then all you needed was a drive corrector for the R.A. motor that would allow you to adjust the right ascension drive rate to compensate for the R.A. drift, and you had a fairly nice unguided system and could take images.

However, since most of our imaging is done from 45 degrees to the zenith, we will benefit more from this R.A. Correction Method. Begin by having your mount polar aligned by a polar scope or other method.

1. Align your CCD guide camera to be square with the R.A and Dec. axes of your mount. Know which axis is R.A. and which is Dec. Assume nothing…test it. Make sure that PEM is turned on with a good PE curve. Absolute encoders are even better!

2. Go to a star near the celestial equator / meridian and start guiding.

3. Set your guiding aggressiveness to 0%.

4. Open your guiding graph and watch only the drift on the Dec. line. Using the azimuth knobs adjust the mount's azimuth until the star stays on the line and does not drift up or down. Don't worry about what is happening on the R.A. line, just zero out drift on the Dec. line.

5. Once that is done, go to a star near the zenith (usually on the East side within 1/2 hour of the meridian).

6. This time you will watch only the R.A. line on the guiding graph. Adjust the mount's altitude knob (only pushing upward) until the star stays on the line and does not drift. If you overshoot, loosen the altitude locking knobs; lower the altitude; re-tighten the knobs and start again. Remember, your guiding aggressiveness is set to 0%.

7. Done this way, the two adjustments are independent and don't interfere with each other. The adjustment can be done in about 20-30 minutes. Repeating steps 1-6 will allow refinement and confirmation.

What you will end up with is no R.A. and no Dec. drifting at the zenith. This near zero drift zone will extend approximately 35 to 40 degrees in either direction, giving you a 4 hour drift-free window for imaging. Depending on focal length and pixel scale, you might get round stars in a typical 10 - 20 minute exposure as much as 45 degrees from the zenith.

So, you can do drift alignment either way: align on the pole with classic drift alignment or align on the refracted pole with the R.A. method. The former will minimize Dec. drift over a large area of the sky; the latter will minimize R.A. and Dec. drift at the higher parts of the sky where most imaging takes place. Everywhere else you will need to guide.

> **Note:** Making and using a Pointing/Tracking model in APCC Pro following the polar align process will improve results even further.

Several things to keep in mind

- Before you begin you will want to level the mount so that as you make adjustments in either azimuth or altitude, adjusting one will not affect the other.

- Make sure that all aspects of your mount and scope are tight (rings, scope and mount fasteners, focuser and camera, etc.). If you are using a mirrored scope, be sure that the mirror is locked (if available) to minimize flex and flop.

- You must make the azimuth adjustment first so that you can then make the altitude adjustment accurately; otherwise, the azimuth adjustment will change your altitude setting and it will have to be re-done.

- The altitude adjustment must always be finalized by pushing upwards against gravity with the locking knobs quite snug (not to be further tightened). If you overshoot, then you should loosen the knobs and lower the altitude and repeat the upward adjustment.