

Adjusting the worm gear spacing on the Atlas/EQ6/CGEM and similar mounts.

Before you start adjusting things, make sure that the worm gear is not loose in the housing. Do this by removing the caps from the worm gear housings on the control panel side of the mount. Tapping around the edge of the metal caps with the hard plastic end of a screw driver will often make these caps much easier to remove. Once removed, place your finger on the end of the worm gear shaft and try to move the axis back and forth. The worm gear should not move in and out when you do this. If it does, then the worm gear will need to be tightened before making any other adjustments. This is best done with the worm gear housing removed from the mount which I will not get into here.

To adjust the worm gear spacing you will want to have the RA balanced. You can do this with as little or as much weight on the mount as you want. If the mount is unloaded, you don't need to balance the DEC. If it is loaded, then you need to balance the DEC as well.

Assuming the worm gear is tight, loosen up the four 5mm allen head bolts that hold the worm gear housing on and then snug them down just to the point that they start to tighten. The housing needs to be able to slide while not moving up and down. Turn the mount on and set the slew speed to 9. There are two small 2mm allen socket adjustment screws, one on the top of the worm housing and one on the bottom. The one on the bottom pushes the worm gear and ring gear apart while the one on the top pulls them together. If your axis is too loose so that you have a lot of backlash, then back the bottom screw out a little and run the top set screw in while you are slewing the mount. As soon as the gears bind, stop the slew and back the set screw out a fraction of a turn. Then start slewing again and if the gears are still bound then run the bottom screw in a bit. You need to do this until the gears are close to binding, but not quite there. You will notice as you do this, the play in the axis will lessen and probably not be noticeable. There are occasionally slight defects in the worm and ring gear or the spur gears that will keep you from getting the gears too close, but that is not usually a problem. The adjustment will have to be made to these high spots if they are present in your gear set and may leave some noticeable backlash. Once you are done adjusting the set screws, tighten down the four allen head bolts. I usually do this while the mount is slewing as well because sometimes it can start binding again when you tighten these down. If that happens, you need to back the worm off a bit. Again, backing the worm off is done with the bottom set screw. You will want to slew the axis in both directions all the way around (if your mount allows) to ensure that there are no high spots that will cause binding. You must be more careful making these adjustments with the CGEM that uses servo motors than the Atlas/EQ6 with steppers. The stepper motors can handle some binding with no damage while the servo motors can be damaged if run too long with the gears bound up.

Be aware that the tighter the gear mesh, the noisier the mount is likely to be (some Atlas mounts sound like sewing machines). You can loosen up the worm gear mesh and adjust the spur gear mesh (which I won't get into here) to lower the noise level but you do so at the expense of slop in the axis and increased backlash. Also, it is generally a good idea to be more careful with balance once you have the gears tightened up so that you put less stress on the gears.

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Upper DEC

Lower DEC

Upper RA

Lower RA