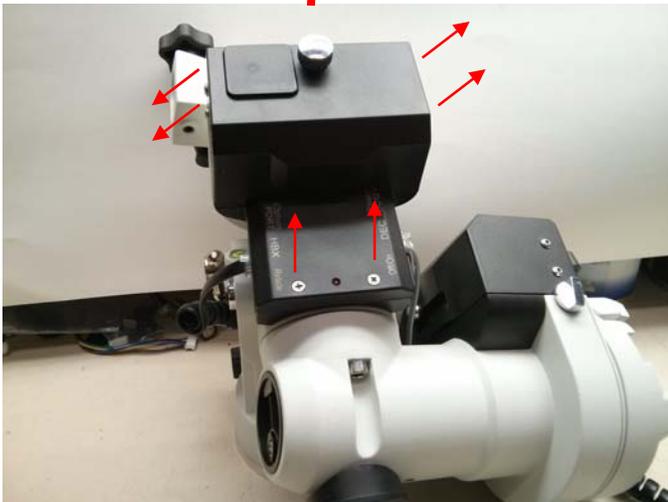
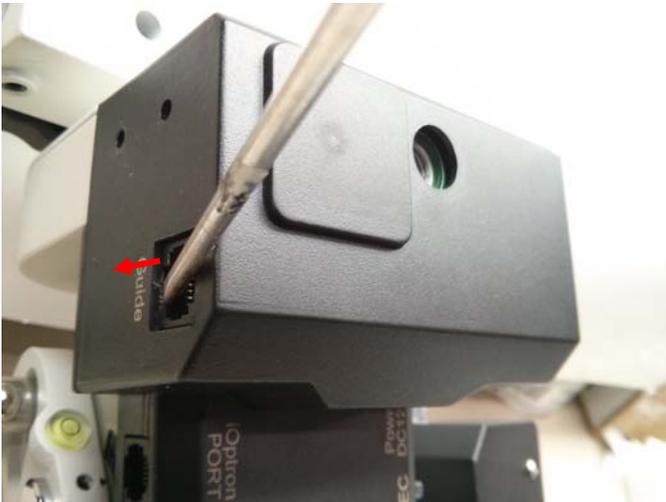


Free play elimination on R.A. axis (similar for a DEC axis)

1. If it is determined that a CEM25 mount has any free play in either R.A. or DEC axis, here is the instruction on how to eliminate it. The illustration is only for R.A. axis. It should be applied to DEC axis as well.
2. Remove Tension Adjuster/Gear Switch Locking Screw. **Do not lose the spring and steel ball inside.** Unscrew screws that hold R.A. unit and main control board cover (two on left side, two on right side, two on the main control board).



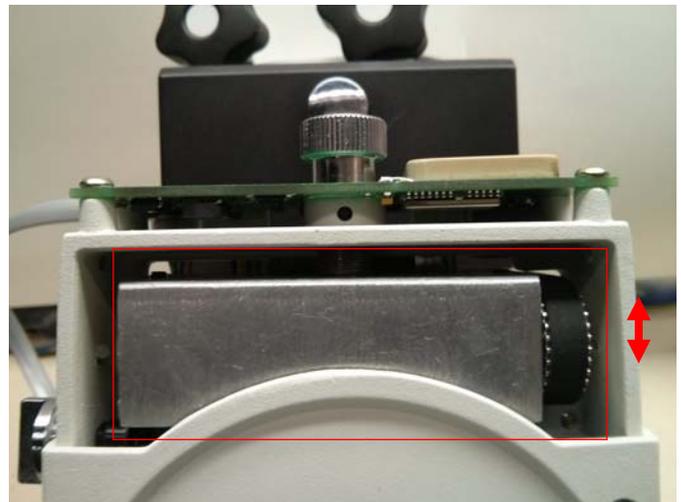
3. Remove R.A. unit and main control board cover. If the Guide port adapter stops the removal of the cover, use a small flat screwdriver to lift the edge a little bit while pull off the cover.



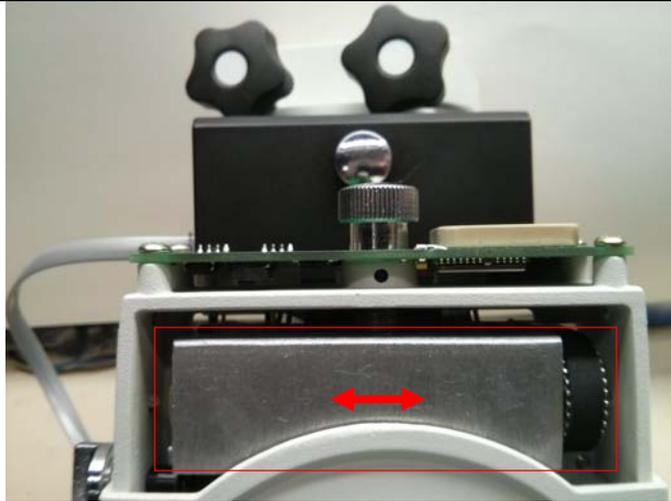
4. Put the Tension Adjuster Screw back and FULLY tighten it.



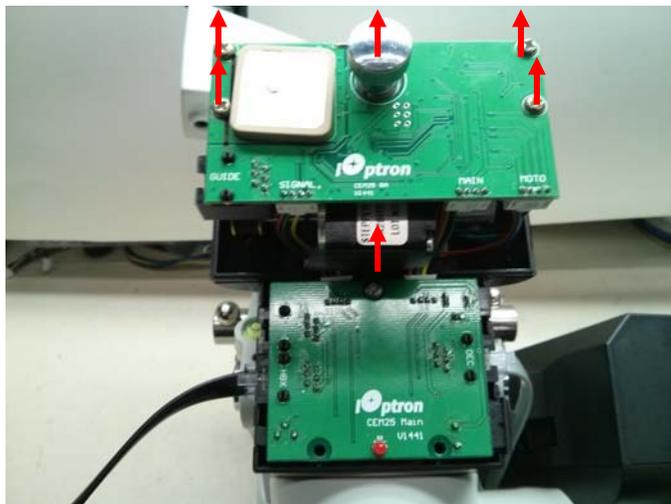
5. Observe if there is any R.A. gearbox movement while holding the end of the CW shaft and swinging it from left to right, SLOWLY and GENTLY.
6. If there is only a very small up and down movement of the whole gear box---there is no play. The gear box will move higher until a slippage happens while the Tension Screw is released.



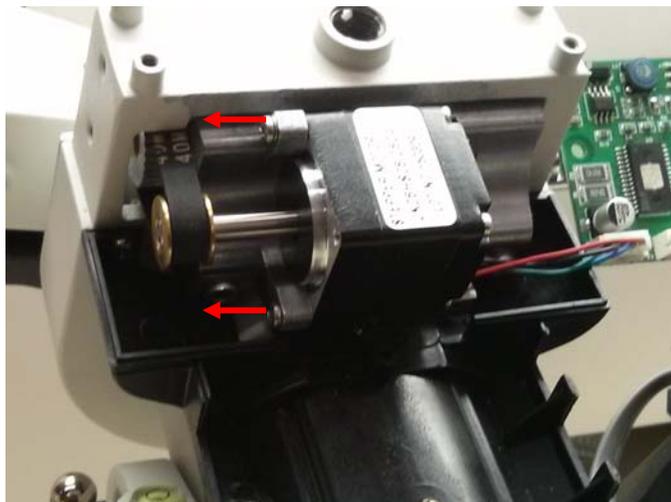
7. If the whole gear box is moving left and right, then there is play caused by the positioning of the R.A. hinges. It can be removed by tightening the hinge locking screw.



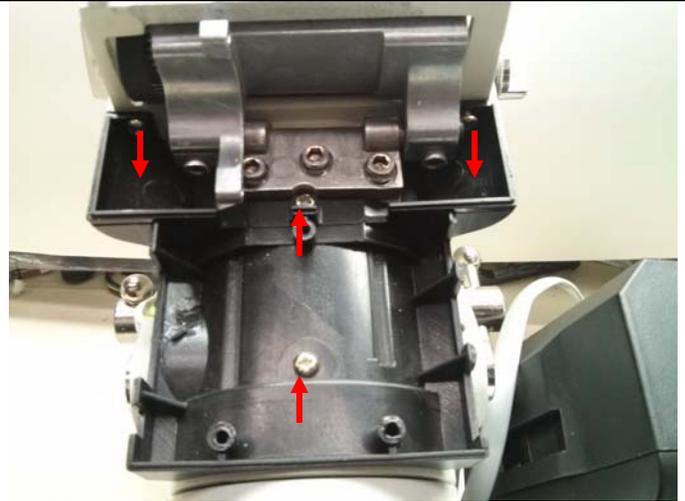
8. Remove Tension Adjuster and the R.A. board and main control board mounting screws. Pull out R.A. and main control boards.



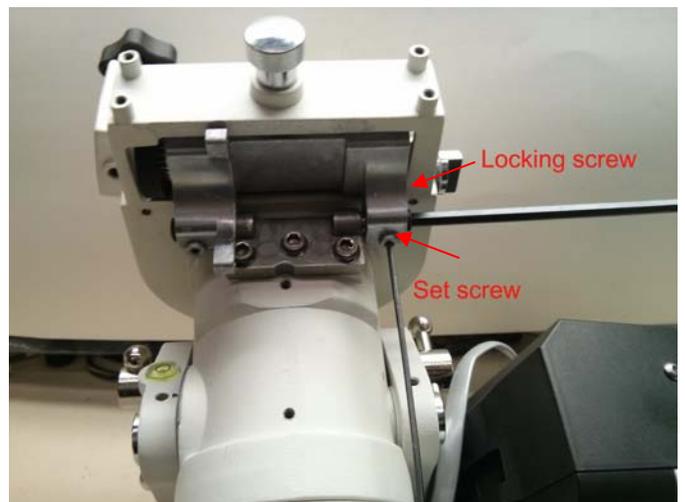
9. Remove the motor by unscrewing 2 small screws from the R.A. cage.



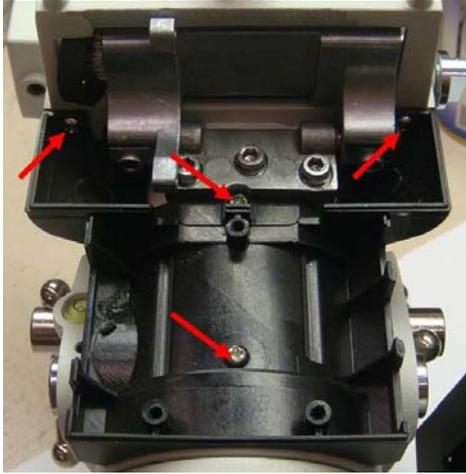
10. Remove black plastic fixtures from the mount by unscrewing 4 screws.



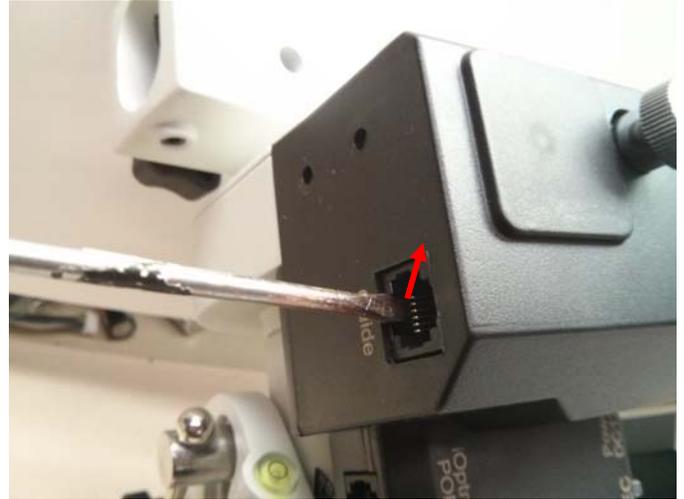
11. There are two Axle Locking Screws and two Set Screws. Release one Set Screw a half turn. Slightly tighten the corresponding Locking Screw. Stop tightening when you just feel the resistance. Gently shake the R.A. unit to feel if the play is gone. Retreat the Tension Adjuster to the position where the gear switch can be turned. Turn the gear switch to OPEN position to disengage the worm gear box. Turn the gear switch to CLOSE position and the worm gear box should spring back on to the ring gear. If it can't move freely, the Locking Screw is too tight. It needs to be released a little. It should be tightened in a way that there is no R.A. play occurred when you lightly rock the R.A. unit. Retighten the set screw.



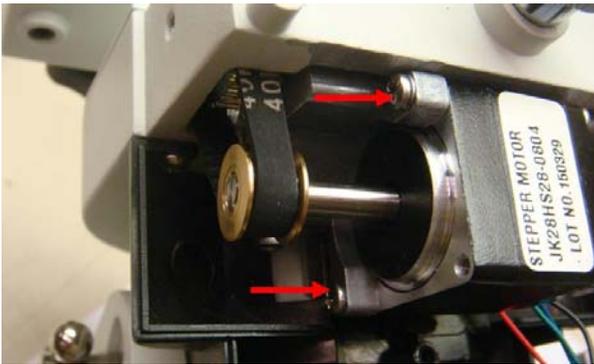
12. Install the R.A. black plastic fixture back and secure it with the screws.



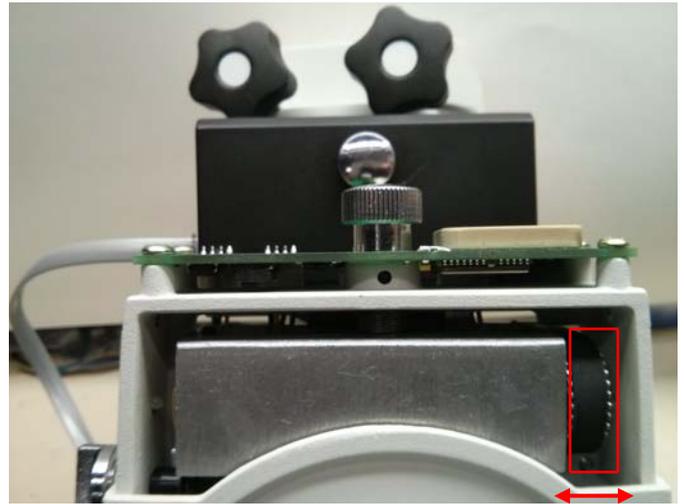
13. Install the motor back to the R.A. cage and the belt is fully pulled over the wheel by fastening two small screws. Adjust the motor position while tightening the screws to make sure the belt is properly tensioned.



16. If only the pulley with the belt is moving sideways, *i.e.*, from left to right, then there is some play caused by the R.A. worm assembly. It can be fixed by tightening the R.A. worm end caps.

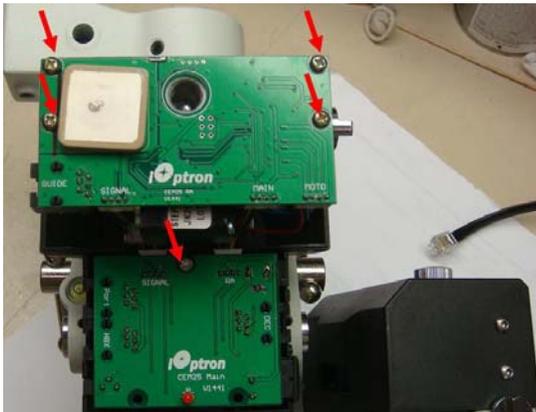


14. Connect the motor control cable to the R.A. board and secure it. Connect the SIGNAL sockets and POWER sockets between the R.A. and the main control boards, respectively. Install the R.A. board and main board and secure them.



17. Please refer to **Instruction for Upgrading a ZEIQ25 Mount to a CEM25 Mount** to adjust the worm end cap to eliminate the play caused by the R.A. worm assembly.

18. **DO NOT test for play or slippage by setting the CW shaft horizontally with CW at the end.** This is equivalent to setting the R.A. on the side with a 16lb OTA mounted and without any counter balance! The slippage could degrade the teeth of the worm and wheel.



15. Reinstall the cover by secure the four screws (two on the left side and two on the right side). Install the Tension Adjuster. If the Guiding port adapter blocks the installation of the cover, use a small flat screwdriver to lift the edge a little bit while installing the cover