R.A. Worm Replacement and Gear Meshing Adjustment

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This instruction will help you to change a new R.A. worm or adjust the R.A. worm/gear meshing of an iEQ45 Pro mount. The procedure is similar for the DEC unit.

If you are adjusting the gear meshing only, do not remove the worm out from the worm assembly housing. Just check if there is any lateral worm movement and if the worm end cap is too tight. If it does, please adjust it accordingly.

**Tool needed:** a set of metric Allen wrench, a Phillips screw driver, a pair of nose pliers

1. Remove CW shaft and any other accessories for the mount head. Set it on a working bench. Adjust the mount altitude to over 40 degrees to avoid dovetail saddle hit the mount base while rotating the mount head. Disengage the R.A. axis by loosening four R.A. locking screws and rotate the mount head with dovetail facing down.

Remove the iEQ45 Pro main board and RA unit plastic cover by removing the four screws on the top and two small screws on two sides (one on each side).

2. Remove the motor from the motor mounting bracket by unscrewing the three screws from the R.A. assembly. Remove the belt as well.

3. Remove the RA board by unscrewing three screws on it.

There is a small spring on a brass post under the stepper motor. Do not lose it.
4. Disconnect the GPS wire from the main board.

5. Remove the R.A. worm assembly from the mount by unscrewing four mounting screws (two on each side).

6. Remove the black PEC encoder wheel from the worm end by releasing the screw. DO NOT break the PEC encode wheel.

7. Loosen the set screw and remove the worm pulley from the worm.

8. Loosen the set screw and remove the brass end cap at the end of the worm (encoder wheel side).

9. Remove the worm from the R.A. worm assembly housing. Check the bearings integrity to see if they need be replaced.
10. Insert a replacement worm.

11. Install the brass end cap and tighten it use a pair of nose pliers (or similar tool). Retreat 1/16 to 1/8 turns to make sure that the end cap is tightened enough with no lateral free movement of the worm, but it does not jam the worm. You should be able to feel the smoothness of the worm when you turn the worm. **If the end cap is not tightened enough, it will introduce lateral play.**

12. Put the worm pulley onto the worm and tighten the set screw. Reinstall the PEC encoder wheel onto the end of the worm.

13. Apply some grease on the RA worm by a toothbrush, while turning the pulley.

14. Install the R.A. worm assembly back onto the mount. Adjust its position so that the worm is evenly sitting on top the ring gear. Secure it by tightening four screws. Double check the spacing between the worm assembly and the ring gear housing to make sure they are evenly spaced from end to end.

15. Before install the motor back onto the mounting bracket, make sure that the spring is in the correct place. The spring plays a very important role in the engagement between the R.A. worm and its ring gear.
16. Wrap the belt onto the worm pulley. Install the motor onto the R.A. assembly with belt onto the motor pulley. Install motor mounting screws. Adjust the motor position while tightening the screws to make sure the belt is properly tensioned.

17. Push the outside edge of the motor down with your finger. The worm assembly end should tilt upward. The spring under the motor will push the motor back when the finger is released. If the spring acts too weak to push the motor back, it indicates that the worm assembly hinge is not moving freely. Loosen the set screw on hinge end cap. Retreat the hinge end cap a little and check if the spring acts stronger. Tighten the set screw. There are two end caps on both sides.

18. Connect DEC cable to the main board and connect hand controller cable to the main board. Connect the 12V power to the main board. Engage the R.A. axis by tightening the four knobs.

19. Connect the GPS module connection cable to the main board. Install the R.A. board by tightening the three screws.

20. Install the main board and RA unit plastic cover by tightening the four screws on the surface and two small screws on two sides (one on each side).

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