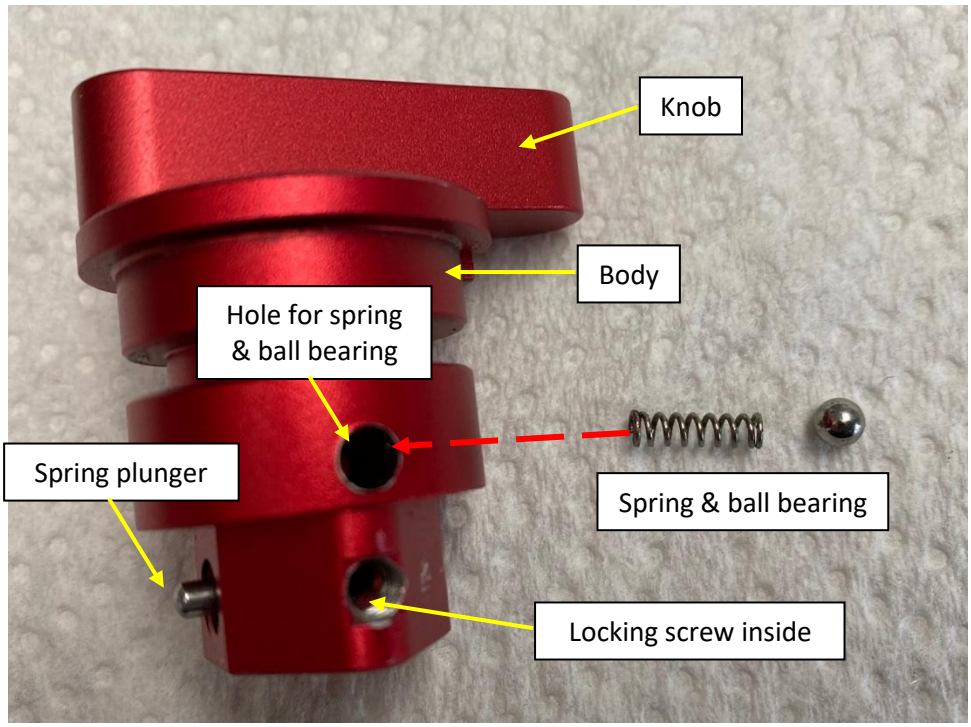
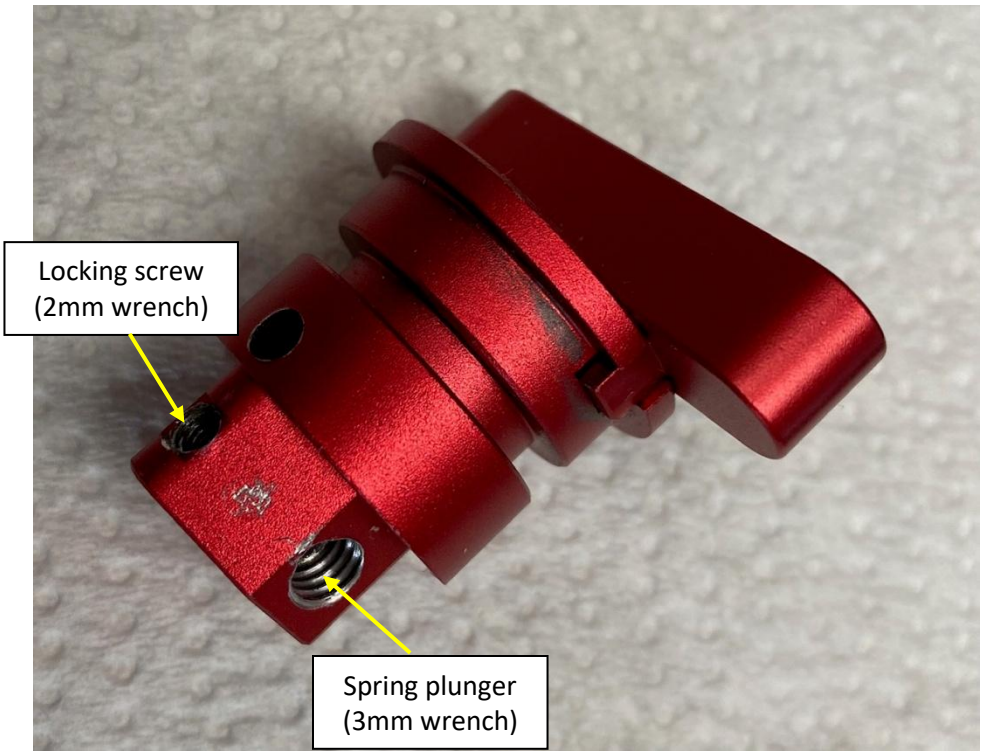
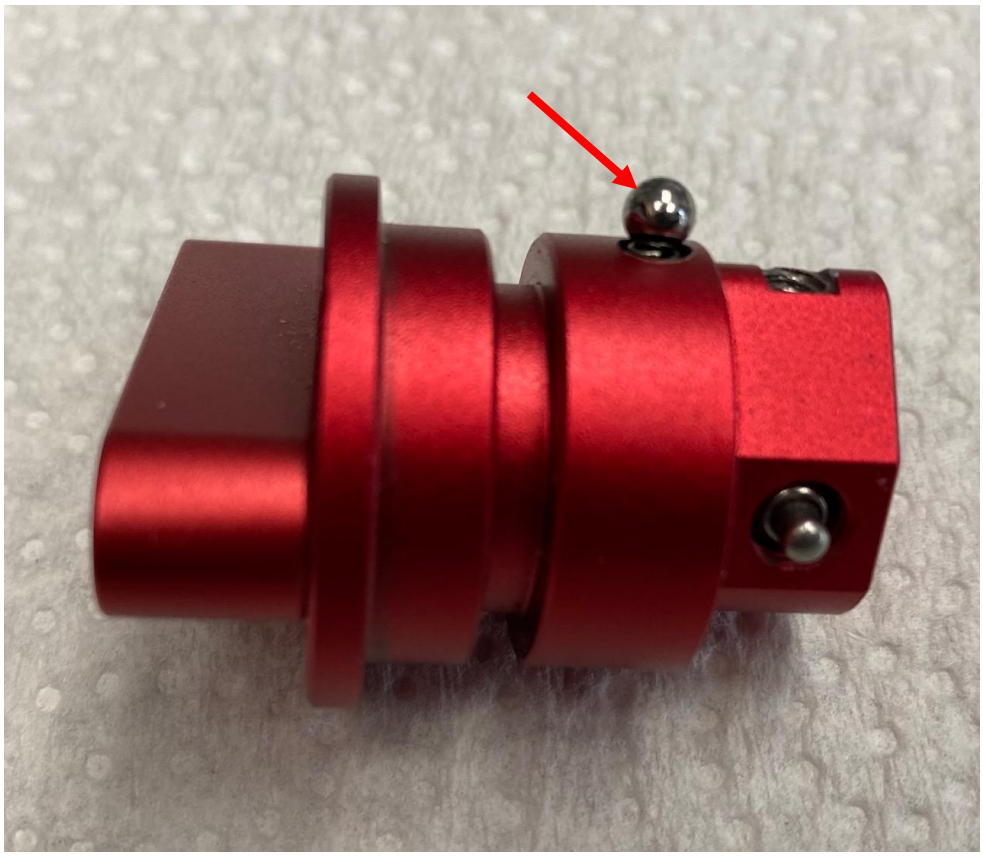
iOptron Gear Switch and Meshing Adjustment

(for mount CEM120/70/40/26 and GEM45/28)

iOptron Gear Switch uses a spring plunger to apply the force on worm assembly to push the worm against the ring gear for gear meshing. It has a tuning knob, body, threaded spring plunger, positioning spring and ball bearing. Shown here is a CEM120 gear switch. Other mounts have shorter spring plunders.

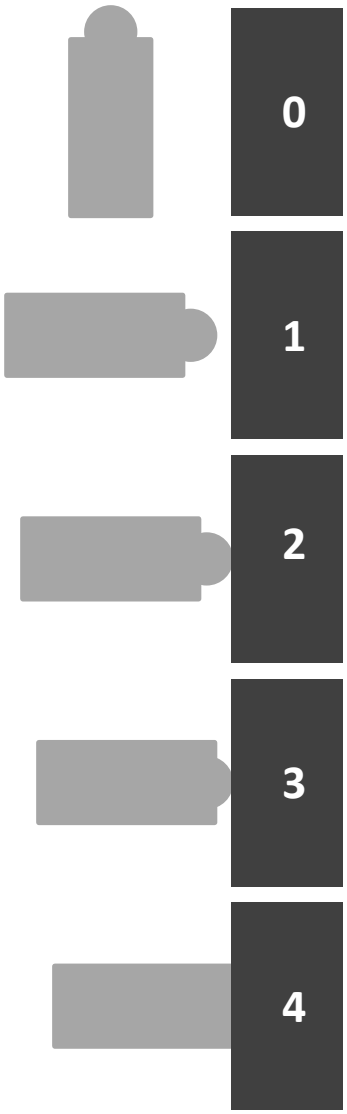






The ball bearing will stay on top of the spring and outside the gear switch hole. The ball will be lost easily during removing or installing the gear switch. To install, the ball bearing and spring need be pushed down into the hole while inserting the gear switch into the mount.

Spring Plunger position related to meshing result



Disengaged position

Not touched. There will be free play

Just touched. Minimum meshing force. No free play

Engaged position. Normal operation position

Plunger adjusted too much. Ball had been pushed all the way in and no spring loading power

The gear switch should be adjusted to a position that between 2 and 4.

Suggested gear adjustment screw/plunger adjusting procedures:

(1) Back out the plunger little by little while swing the ring gear (RA unit or dovetail saddle) gently
(2) Stop backing out when you just start feeling FREE play between the worm/gear. This is the starting meshing point
(3) Turn the adjustment screw the other direction to tighten to the point where the free play just gone
(4) Turn the plunger 1/8 turn ~ ¼ turn more. This should be the good meshing point. You may still have ~1/8 to ¼ adjustment range. For a CEM120 mount, you may have more adjustment.

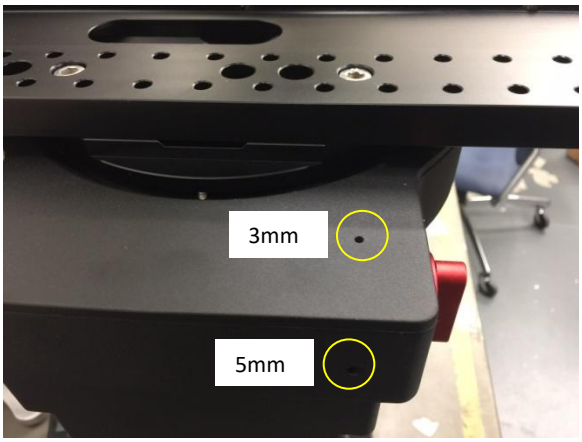
Gear Switch Meshing Adjustment

(updated Oct. 1, 2022)

<u>To Adjust DEC Gear:</u>

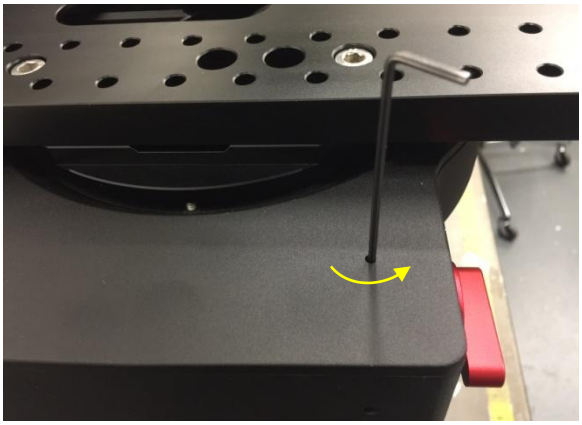
Disengage DEC gear switch. If there is an axle lock, please release/remove it.

Rotate DEC saddle to exposure two small holes next to DEC **Gear Switch**: one on the top cover (3mm diameter), one on the side (5mm). There is a **set screw** inside the 3mm hole to lock the **gear adjustment screw**, which is inside the 5mm hole.

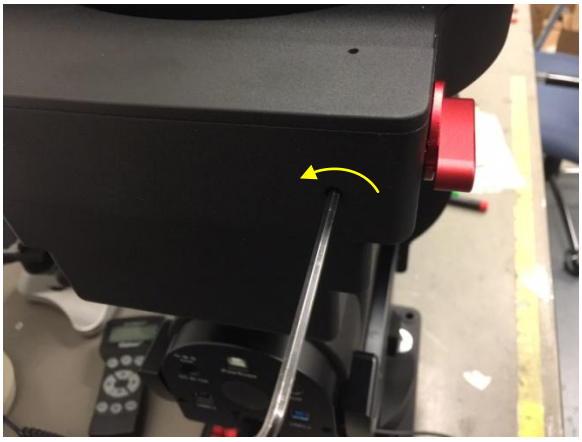


Engage the worm/gear.

Insert the 2mm hex key into the 3mm hole on the top. Gently turn the hex key until you feel it has been engaged with the screw. Turn the **set screw** half a turn counterclockwise.



Adjust the **gear adjustment screw** on the side inside 5mm hole by using the 3mm hex key. Turn counterclockwise to loosen the meshing or turn clockwise to tighten the meshing.

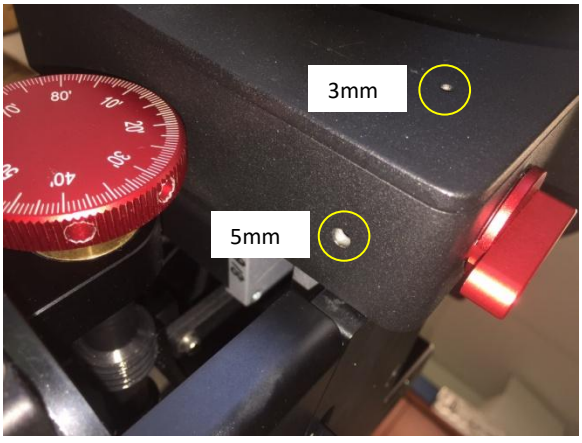


If the motor stalls or the mount does not tracking smoothly, most likely the meshing is too tight. You may loosen it by about 1/8 turn (**or less for tracking**)***. Tighten the set screw to LOCK the gear screw (important)***, then test the mount. Adjust again if needed, but no more than 1/2 turn in total.

If you feel there is free play between the worm and gear, you may tighten the gear screw to eliminate it. ***DO NOT over tighten the meshing screw to Position 4 which the spring loading capability of the worm system will be lost.***

<u>To Adjust RA Gear:</u>

The RA gear meshing adjustment screw is located next to the RA Gear Switch. The set screw is inside a 3mm hole and the gear adjustment screw is inside a 5mm hole.



The adjustment is same as that for DEC gear/worm.