

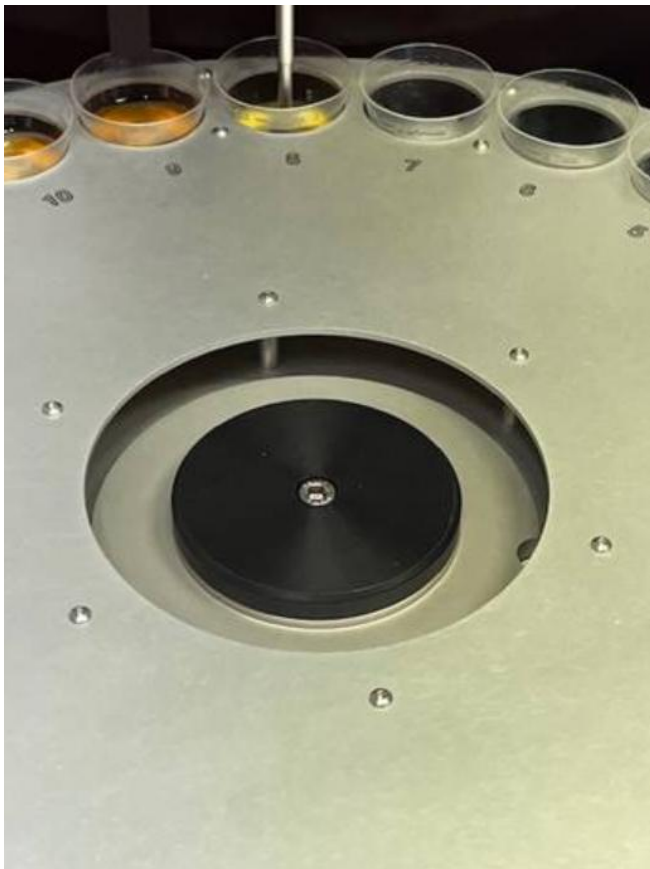
#### Background

It is possible that the sample tray repeatedly comes loose during operation. The software may return the following error:

Error code: Zaber reply error:  
"1 get pos"->"@01 0 OK IDLE FS -570811"

#### Issue

The four (4) screws that hold the metal disc to the glass may come loose during operation. This procedure addresses the proper steps to re-tighten the sample tray, and to modify the software settings to prevent the reoccurrence of the issue.



*The CINRG CS-APC-22M sample tray showing the black acetal cap/cover.*

**NOTE:** Never perform torquing operation on the carousel while the instrument is on. Doing so will shear the gears inside the carousel drive. Those drives do not have metal Gear but composite grade material for smoother, maintenance free and quieter operation, they shear off if we apply external force to it.

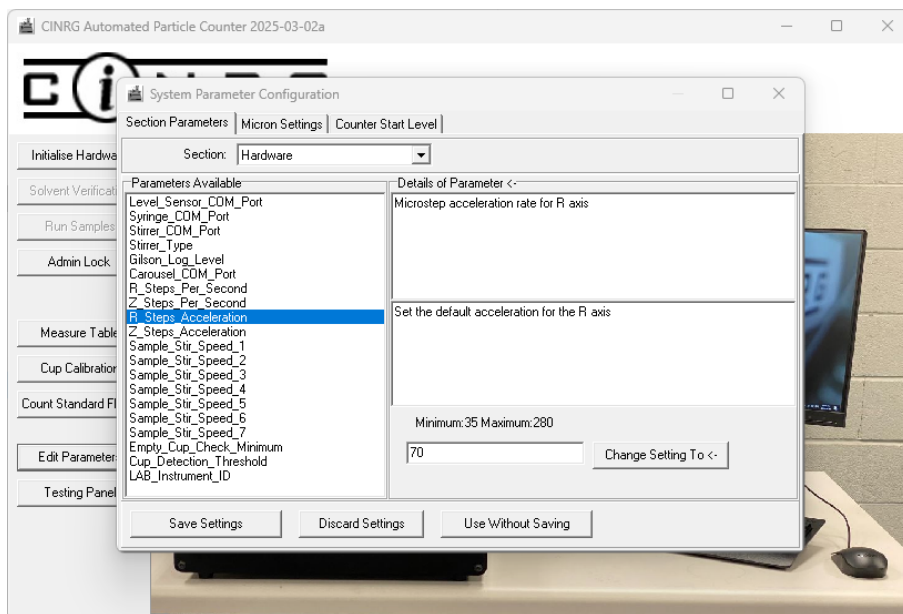
The black acetal cap with one hex socket screw doesn't have a functional purpose. It just covers the 4x #10-32 Hex socket head screws that need to be tightened. To tighten the sample tray:

1. Remove the sample tray.
2. Using the CINRG software's testing panel, send 'Reset carousel'.
3. Once the carousel resets and is at position 1, close the software and turn off the instrument.
4. Remove the 1x metric hex socket screw holding the black acetal cap/cover.
5. Now check how tight the 4x #10-32 screws that hold the metal disc to the glass. It should neither be too tight nor be too loose. Must be finger tight (slightly more than it).
6. There is an 'o'-ring beneath the metal piece that presses against the glass while you tighten it. While you do the step 5, check if the 'o'-ring did not move from its groove (underside of the metal disc).
7. Once you reinstall/tighten the metal disc, do not install the black cap (we can install later when we confirm the issue is resolved- till then we may need access to those 4x screws)
8. Turn on power to the instrument
9. Open CINRG software and head to the testing panel. Click reset carousel. Also input several sample positions and see how the unit performs.

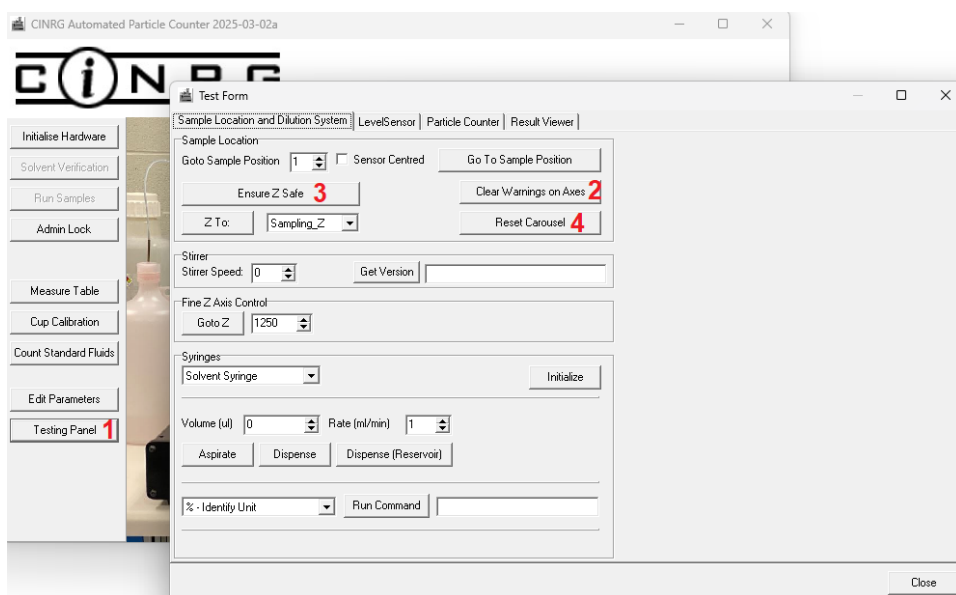
## Preventing Re-occurrences of a Loose Tray

If the tray is coming loose repeatedly, it may be necessary to lower the speed of the rotary drive. This can be accomplished through the CS-APC-22M instrument software.

1. Launch the instrument software in admin mode.
2. Click the [Edit Parameters] button from the admin menu.
3. From the Section Parameters tab select the Hardware section (see Figure 1).
4. Set R\_Steps\_Per\_Second to 50000.
5. Set R\_Steps\_Acceleration to 35.
6. Click Save Settings and close the System Panel Configuration dialog.



**Figure 1** – The Section Parameters tab of the Edit Parameters dialog showing the hardware settings.



**Figure 2** – The Sample Location and Dilution System tab of the Testing Panel dialog.

You may need to perform an instrument re-set after encountering any motion related errors from Zaber 'Z' axis drive or the Rotary drive. You can use the testing panel to clear out the errors to resume operation.

1. Click on the [Testing Panel] button from the admin menu (labelled “1” in Figure 2).
2. Click on the [Clear Warnings on Axes] button (labelled “2” in Figure 2).
3. Click on the [Ensure Z Safe] button (labelled “3” in Figure 2).
4. Click on the [Reset Carousel] button (labelled “4” in Figure 2).