

1. **Purpose:** To provide instructions on how to test the stability of the cartridge fixture within the WOLF, specifically with respect to the cartridge insertion process.

2. **Tools Guide:**

- Examination gloves
- Reference cartridge or sorting cartridge

3. **Background:**

The cartridge fixture within the WOLF is responsible for securing the cartridge in place. If the cartridge fixture is unable to reproducibly secure the cartridge in place, issues with cartridge alignment could arise. This work instruction can be used to assess whether the cartridge fixture is stable, with respect to the insertion process. Note: for a more thorough assessment of all aspects of the cartridge fixture, including the OSV and PZT systems, please refer to "[Work Instructions_03 Cartridge Fixture Test](#)."

4. **Procedure for cartridge insertion test:**

- Turn the WOLF on and open WOLFViewer software.
- Press "new cartridge" button and follow the prompts to insert either a reference cartridge or sorting cartridge.
- Open the "Chip Alignment" pop-up window, and select the "Align" button under the "Auto" tab.
- Once aligned, keep the "Chip Alignment" pop-up window open, type the command "ctrl+shift+m" to display the hidden "Advanced Settings" tab.
- While in the "Advanced Settings" tab, record the XYZ coordinate values for the chip center (**Figure 1A**).
- Remove the cartridge from the WOLF and re-insert it. *Note: there is no need to press "new cartridge" button, simply remove/reinsert the same cartridge*
- Proceed back to the "Auto" Tab and click the "Align" button to align the cartridge for a second time.
- Go to the "Advanced Settings" tab and record the XYZ coordinate values for the chip center.
- Repeat steps F-H three more times to align and record the chip center coordinates from a total of five alignment attempts.

Note: After each alignment attempt, remember to REMOVE/REINSERT the cartridge. The goal of this procedure is to test the stability of the cartridge removal/reinsertion process.

- Calculate the average and standard deviation for X, Y and Z coordinates (**Figure 1B**).
- If the differences in chip position are $< 5\mu\text{m}$ as expressed by $SD < 0.005$ for any axis, then the cartridge fixture is deemed stable.
- If the differences in chip position are $> 5\mu\text{m}$ as expressed by $SD > 0.005$ for any axis, then replace the cartridge fixture according to "[Procedure WOLF_05 Cartridge Fixture Replacement](#)" or re-train the user on proper cartridge insertion.

Figure 1. Determine the stability of the cartridge fixture.

Figure 1A. Within the “Advanced Settings” tab, find and record the coordinate values of the Chip center.

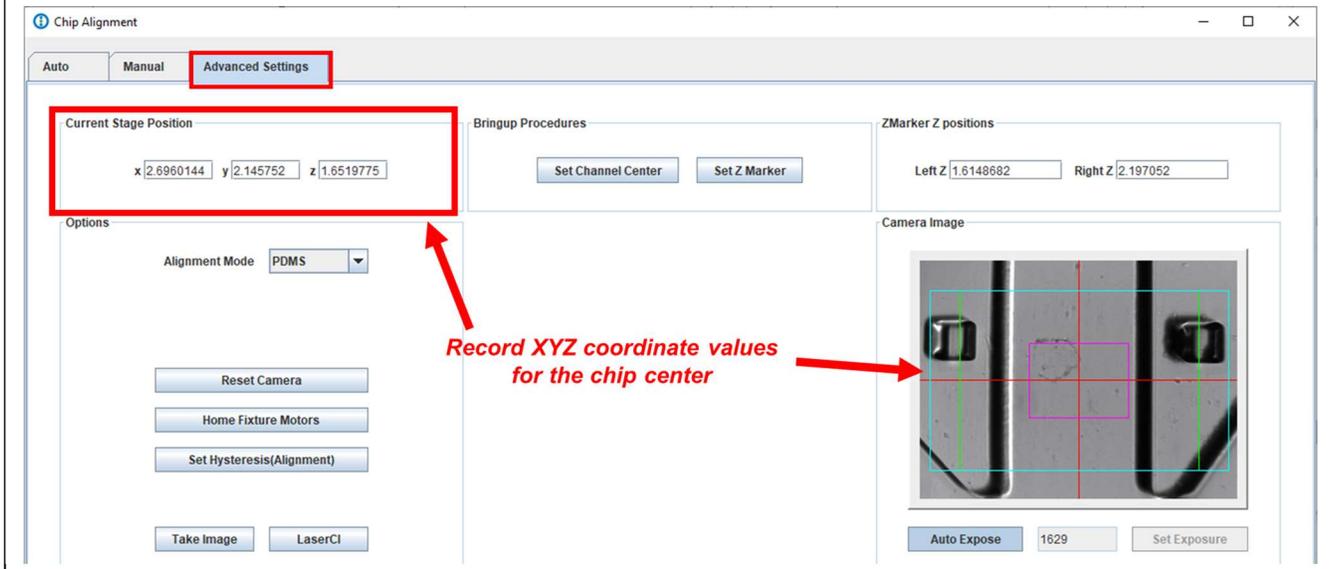


Figure 1B. Calculate the standard deviation of each coordinate value (X,Y,Z) to determine the stability and reproducibility of the cartridge fixture with respect to the insertion process.

Align #	Chip Center - Coordinate Values (mm)		
	X	Y	Z
1	2.8726196	1.704071	1.7394409
2	2.8711548	1.70401	1.7417603
3	2.8694763	1.7036133	1.7408752
4	2.8726196	1.70401	1.7398682
5	2.8701156	1.703444	1.739488
Average	2.871	1.704	1.740
St Dev (mm)	0.00143	0.00028	0.00101
St Dev (um)	1.43	0.28	1.01

9.0 Revision History:

	ISSUED DATE	Description of Change	Author
A	9/13/2020	Initial version	E.Rubio de la Torre
B	2/9/2021	Reduced/edited to be specific to cartridge insertion	E. Leary