

Performance Testing for Axygen® Automation Tip (TT-1000-CBK-HTR)

Application Note



Method

The liquid handling arm (LiHa) on the Tecan® Freedom EVO® liquid handling workstation was used to assess precision as coefficient of variation (% CV), and accuracy as percent deviation (% D), for Axygen 1,000 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 100 µL and 1,000 µL, a column of 8 tips aspirated from an Axygen low profile reservoir (Corning Cat. No. RES-SW96-LP) and dispensed into a Corning® 96-well, black, clear bottom microplate (Corning Cat. No. 3631).

For the 100 µL test volume on the LiHa, a column of 8 tips were arranged so that each tip aspirated 100 µL of Range A solution (Artel Cat. No. MVS-203) and dispensed 100 µL into 100 µL of diluent solution (Artel Cat. No. MVS-202) in each well.

For the 1,000 µL test volume on the LiHa, a column of 6 tips were arranged so that each tip aspirated 1,000 µL of Range HV solution (Artel Cat. No. MVS-214) and dispensed 250 µL into 0 µL of diluent solution in each well. To determine the volume of liquid dispensed in each well, absorbance readings for the solutions (diluted Range A solution for 100 µL dispense and Range HV solution for 1,000 µL dispense) were measured using an Artel ELx800NB® plate reader (Artel Cat. No. 1311197). Each study was performed 6 independent times for a total of 48 tip dispenses for the 100 µL test volume and 3 independent times for a total of 18 tip dispense for the 1,000 µL test volume. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the tip dispenses.

Results

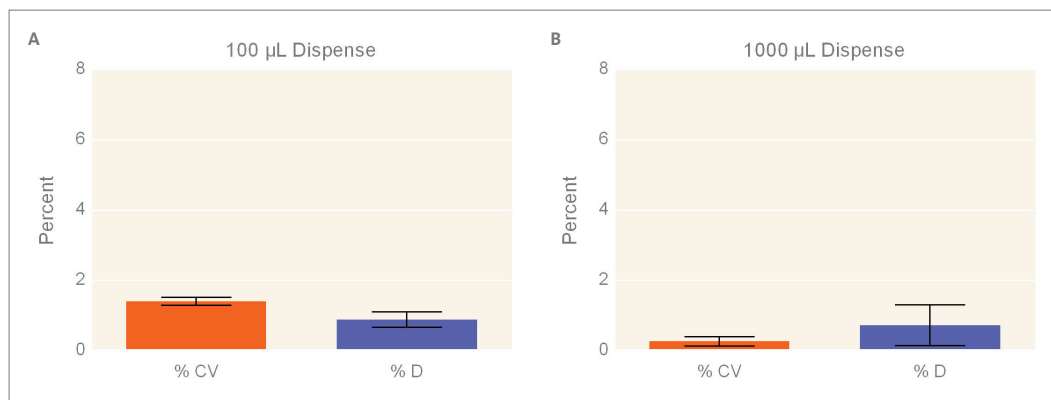


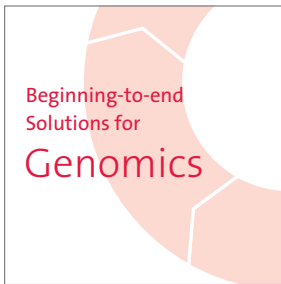
Figure 1. Analysis of TT-1000-CBK-HTR tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen® TT-1000-CBK-HTR tips dispensing (A) 100 µL and (B) 1,000 µL volumes using the LiHa on the Tecan Freedom EVO liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 1.5% for both 100 µL and 1,000 µL dispenses.

Table 1. Aqueous Dispense Results

Target Volume (µL)	100	1,000
n	48	21
% CV	1.41 ± 0.11	0.27 ± 0.13
% D	0.89 ± 0.22	0.73 ± 0.58
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation TT-1000-CBK-HTR tips dispensing 100 µL and 1,000 µL were 5% or below. Therefore, Axygen automation TT-1000-CBK-HTR tips can precisely and accurately dispense volumes as low as 100 µL and as high as 1,000 µL for aqueous solution using the LiHa on the Tecan Freedom EVO liquid handling workstation.



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