

Performance Testing for Axygen® Automation Tip (RRP-50-C-R)

Application Note



Method

The Varispan™ arm on the Perkin Elmer Janus® liquid handling workstation was used to assess precision as coefficient of variation (% CV), and accuracy as percent deviation (% D), for Axygen 50 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 5 µL and 50 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 5 µL test volume, each tip aspirated 5 µL of Range C solution (Artel Cat. No. MVS-205) or DMSO Range C solution

(Artel Cat. No. MVS-217 solution) and dispensed 5 µL into 195 µL of diluent solution (Artel Cat. No. MVS-202) in each well. For the 50 µL test volume, each tip aspirated 50 µL of Range B solution (Artel Cat. No. MVS-204) and dispensed 50 µL into 150 µL of diluent solution in each well. To determine the volume of liquid dispensed in each well, absorbance readings for the solutions (diluted Range C solution for 5 µL dispense and Range B solution for 50 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. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the 48 tip dispenses.

Results

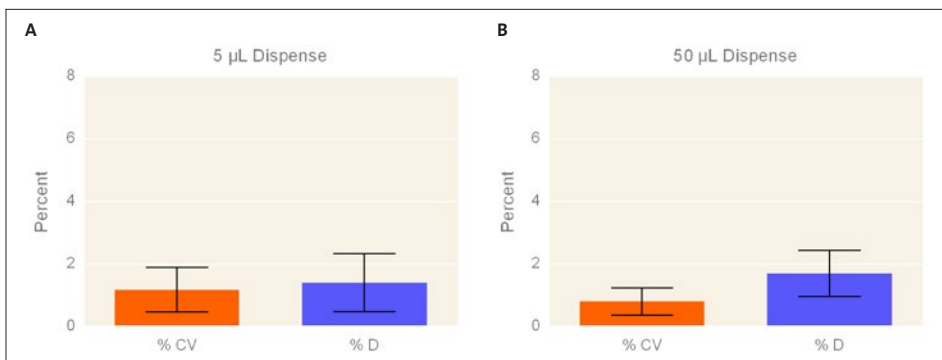


Figure 1. Analysis of RRP-50-C-R tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen RRP-50-C-R tips dispensing (A) 5 µL and (B) 50 µL volumes using the varispan on the Perkin Elmer Janus liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 2% for both 5 µL and 50 µL dispenses, n = 48.

Table 1. Aqueous Dispense Results

Target Volume (µL)	5	50
n	48	48
% CV	1.18 ± 0.71	0.81 ± 0.44
% D	1.41 ± 0.93	1.70 ± 0.74
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation RRP-50-C-R tips dispensing 5 µL and 50 µL were 5% or below. Therefore, Axygen automation RRP-50-C-R tips can precisely and accurately dispense volumes as low as 5 µL and as high as 50 µL for aqueous and DMSO solutions using the Varispan arm on the Perkin Elmer Janus liquid handling workstation.

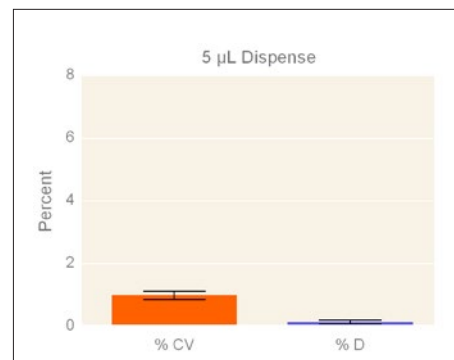
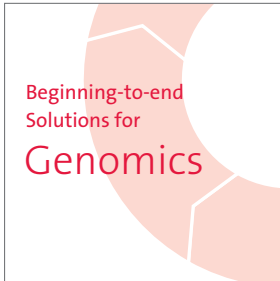


Figure 2. Analysis of RRP-50-C-R tip with DMSO dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen RRP-50-C-R dispensing 5 µL volumes using the Varispan arm on the Perkin Elmer Janus liquid handling workstation were determined using the Artel MVS system. The % CV and % D were below 1% for the 5 µL dispense, n = 48.

Table 2. DMSO Dispense Results

Target Volume (µL)	5
n	48
% CV	0.99 ± 0.13
% D	0.14 ± 0.06
Outliers	0



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