

Performance Testing for Axygen® Automation Tip (VT-384-5UL-R)

Application Note



Method

The Agilent Bravo/Velocity11 liquid handling platform was used to assess precision as coefficient of variation (% CV), and accuracy as percent deviation (% D) for Axygen 5 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 0.5 µL and 5 µL, a rack of 384 tips aspirated from an Axygen low profile reservoir (Corning Cat. No. RES-SW96-LP) and dispensed into a Corning® 384-well, black, clear bottom microplate (Corning Cat. No. 3711).

For the 0.5 µL test volume, each tip aspirated 0.5 µL of Range C solution (Artel Cat. No. MVS-205) or DMSO Range C solution

(Artel Cat. No. MVS-217 solution) and dispensed 0.5 µL into 54.5 µL of diluent solution (Artel Cat. No. MVS-202) in each well. For the 5 µL test volume, each tip aspirated 5 µL of Range B solution (Artel Cat. No. MVS-204) and dispensed 5 µL into 50 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 0.5 µL dispense and Range B solution for 5 µL dispense) were measured using an Artel ELx800NB® plate reader (Artel Cat. No. 1311197). Each study was performed 3 independent times for a total of 1,152 tip dispenses. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the 1,152 tip dispenses.

Results

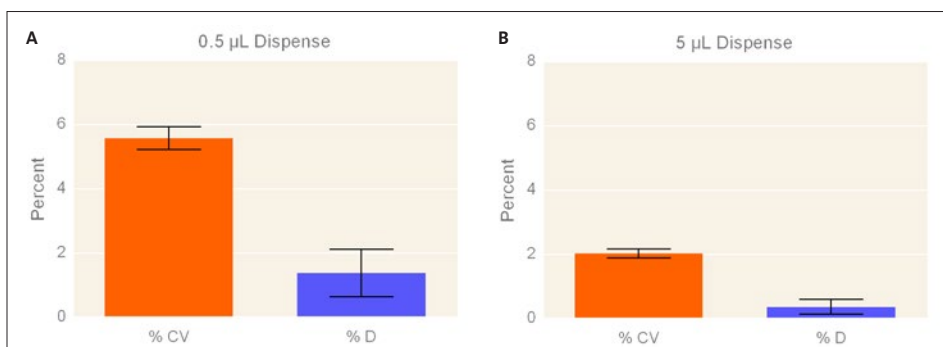


Figure 1. Analysis of VT-384-5UL-R tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen VT-384-5UL-R tips dispensing (A) 0.5 µL and (B) 5 µL volumes using the Agilent Bravo/Velocity11 liquid handling platform were determined using the Artel MVS® system. The % CV and % D were below 6.0 % for 0.5 µL and below 2.5 % for 5 µL dispenses, n = 1,152.

Table 1. Aqueous Dispense Results

Target Volume (µL)	0.5	5
n	1,152	1,152
% CV	5.59 ± 0.36	2.04 ± 0.14
% D	1.38 ± 0.74	0.38 ± 0.23
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation VT-384-5UL-R tips dispensing 0.5 µL were 7% or below and 5% or below for 5 µL volumes. Therefore, Axygen automation VT-384-5UL-R tips can precisely and accurately dispense volumes as low as 0.5 µL and as high as 5 µL for aqueous and DMSO solutions using the Agilent Bravo/Velocity11 liquid handling platform.

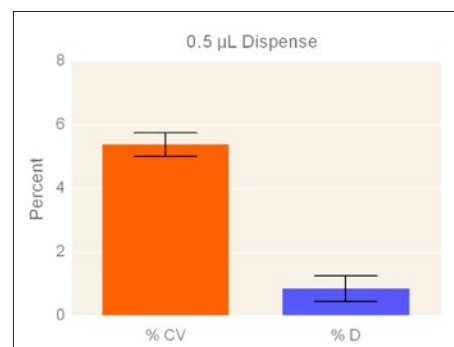
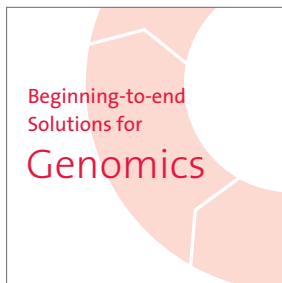


Figure 2. Analysis of VT-384-5UL-R tip with DMSO dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen VT-384-5UL-R dispensing 0.5 µL volumes using the Agilent Bravo/Velocity11 liquid handling platform were determined using the Artel MVS system. The % CV and % D were below 6% for the 0.5 µL dispense, n = 1,152.

Table 2. DMSO Dispense Results

Target Volume (µL)	0.5
n	1,152
% CV	5.40 ± 0.36
% D	0.87 ± 0.40
Outliers	0



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