

Performance Testing for Axygen® Automation Tip (FXF-20-R-S)

Application Note



Method

The Beckman Coulter® Biomek® FX liquid handling workstation was used to assess precision as coefficient of variation (% CV), and accuracy as percent deviation (% D), for Axygen 20 µL tips.

To test the ability of the tip to dispense accurately and precisely at two dispense volumes, 2 µL and 20 µL, a rack of 96 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 2 µL test volume, each tip aspirated 2 µL of Range C solution (Artel Cat. No. MVS-205) or DMSO Range C solution

(Artel Cat. No. MVS-217 solution) and dispensed 2 µL into 198 µL of diluent solution (Artel Cat. No. MVS-202) in each well. For the 20 µL test volume, each tip aspirated 20 µL of Range B solution (Artel Cat. No. MVS-204) and dispensed 20 µL into 180 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 2 µL dispense and Range B solution for 20 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 288 tip dispenses. Evaluation criteria include % D from the set dispense volume and % CV of the measured dispense volume for the 288 tip dispenses.

Results

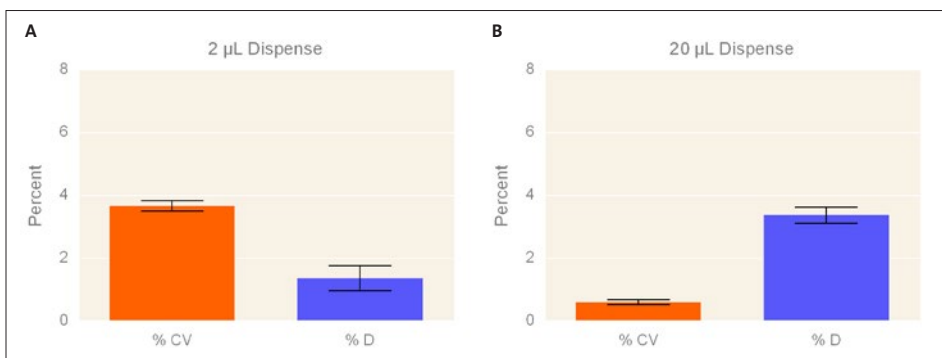


Figure 1. Analysis of FXF-20-R-S tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen FXF-20-R-S tips dispensing (A) 2 µL and (B) 20 µL volumes using the Beckman Coulter Biomek FX liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 4.0% for both the 2 µL and 20 µL dispenses, n = 288.

Table 1. Aqueous Dispense Results

Target Volume (µL)	2	20
n	288	288
% CV	3.68 ± 0.16	0.62 ± 0.07
% D	1.38 ± 0.40	3.38 ± 0.25
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation FXF-20-R-S tips dispensing 2 µL and 20 µL were 5% or below. Therefore, Axygen automation FXF-20-R-S tips can precisely and accurately dispense volumes as low as 2 µL and as high as 20 µL for aqueous and DMSO solutions using the Beckman Coulter Biomek FX liquid handling workstation.

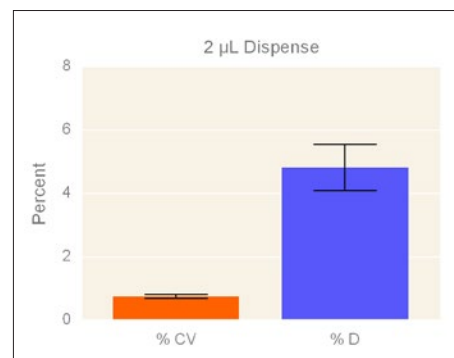
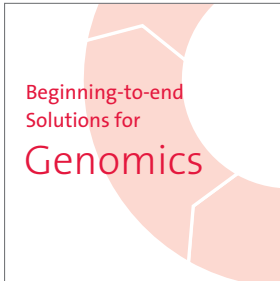


Figure 2. Analysis of FXF-20-R-S tip with DMSO dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen FXF-20-R-S tips dispensing 2 µL volumes using the Beckman Coulter Biomek FX liquid handling workstation were determined using the Artel MVS system. The % CV and % D were below 5% for the 2 µL dispense, n = 288.

Table 2. DMSO Dispense Results

Target Volume (µL)	2
n	288
% CV	0.76 ± 0.06
% D	4.83 ± 0.72
Outliers	0



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Corning Incorporated
Life Sciences

836 North St.
Building 300, Suite 3401
Tewksbury, MA 01876
t 800.492.1110
t 978.442.2200
f 978.442.2476

www.corning.com/lifesciences

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