

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

Application Note



Method

The 8-channel arm of the Hamilton Microlab® STAR™ 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 8-channel arm, a column of 8 tips was 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 8-channel arm, a column of 8 tips was 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 24 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

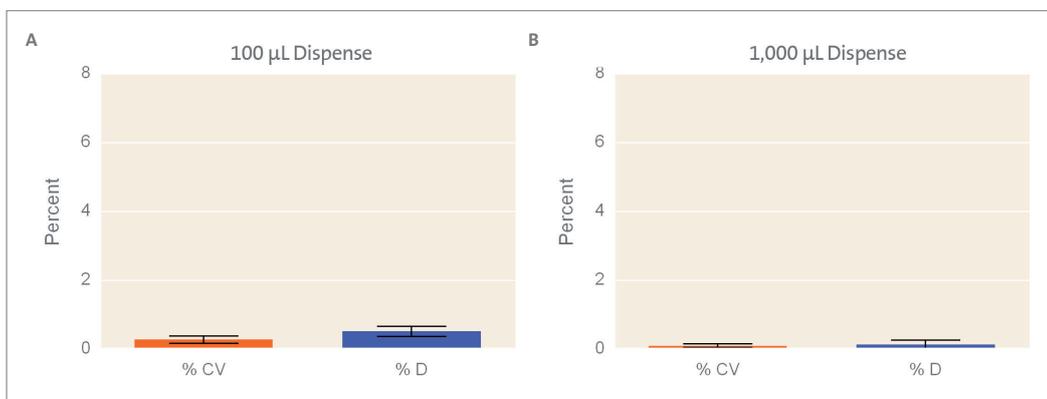


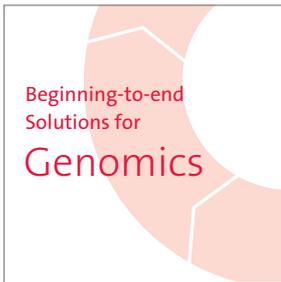
Figure 1. Analysis of HTF-1000-CBK-HTR-S tip with aqueous dispense. The precision (assessed by % CV) and accuracy (assessed by % D) of Axygen HTF-1000-CBK-HTR-S tips dispensing (A) 100 µL and (B) 1,000 µL volumes using the Hamilton Microlab STAR liquid handling workstation were determined using the Artel MVS® system. The % CV and % D were below 1.0 % for both 100 µL and 1,000 µL dispenses.

Table 1. Aqueous Dispense Results

Target Volume (µL)	100	1,000
n	48	24
% CV	0.28 ± 0.10	0.10 ± 0.06
% D	0.52 ± 0.15	0.14 ± 0.13
Outliers	0	0

Conclusion

The % CV and % D for the Axygen automation HTF-1000-CBK-HTR-S tips dispensing 100 µL and 1,000 µL were 5% or below. Therefore, Axygen automation HTF-1000-CBK-HTR-S tips can precisely and accurately dispense volumes as low as 100 µL and as high as 1,000 µL for aqueous solution using the Hamilton Microlab STAR liquid handling workstation.



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Corning Incorporated
Life Sciences Europe

Corning BV
Fogostraat 12
1060 LJ Amsterdam
The Netherlands
Phone: +31 (0) 20 659 60 51
Fax: +31 (0) 20 659 76 73
CSEurope@corning.com
www.corning.com/lifesciences

Support Offices

EUROPE

France
t 0800 916 882
f 0800 918 636

Germany
t 0800 101 1153
f 0800 101 2427

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