

mosquito[®] HTS HV: bridging the gap for automated low volume liquid handling

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introduction

Serial dilutions, plate reformatting, replication and preparation are common, routine processes in a wide range of disciplines within both academia and the drug discovery industry. Automation of liquid handling and dispensing for these processes offers accuracy and reproducibility as well as time savings compared to manual pipetting.

Over the past six years TTP Labtech's mosquito[®] HTS has established itself as an extremely popular, reliable and robust nanolitre liquid handling instrument. With its positive displacement pipetting technology, it offers rapid accurate dispensing of sample volumes from 1,200 nL down to 25 nL regardless of viscosity. Disposable tips ensure zero cross contamination and users can quickly swap between applications, without labware or system set up changes.

mosquito[®] HTS HV is an addition to TTP Labtech's low volume liquid handling portfolio, offering the versatility to perform highly accurate microlitre pipetting regardless of viscosity (from 500 nL to 5 µL), whilst incorporating the same unique qualities of the mosquito[®] HTS instrument.

With outstanding accuracy (within 2% of target volume) and repeatability (c.v.s less than 3% throughout the volume range), mosquito HTS HV can be successfully employed for serial dilutions, plate re-formatting, as well as the preparation of intermediate and assay ready plates. One particular advantage recently highlighted includes the liquid handling of "near assay" serial dilutions using standard plates where volumes between 1 to 5 µL are required.

1. mosquito[®] HTS HV

mosquito[®] HTS HV is an addition to TTP Labtech's liquid handling portfolio, offering an intermediate volume liquid handling instrument from 500 nL to 5 µL.



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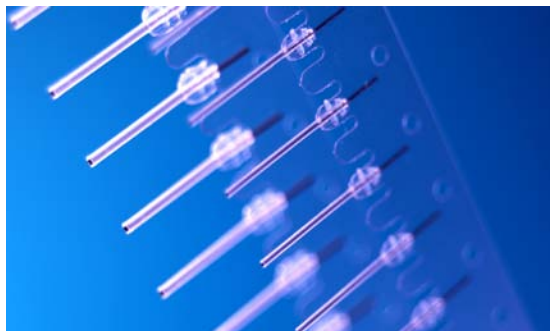
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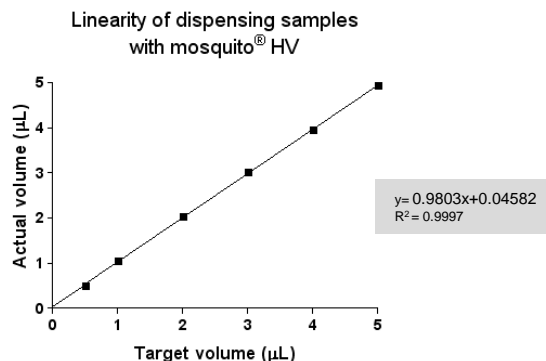
2. mosquito HV tip design

With subtle changes in the mosquito's tip clamping head design, tips capable of accurately pipetting 500 nL to 5 µL volumes are accommodated.



New larger mosquito HV tips measuring 0.7 mm internal diameter, 1.2 mm external diameter ensure tips reach the bottom of wells leaving a minimal dead volume of 50 nL.

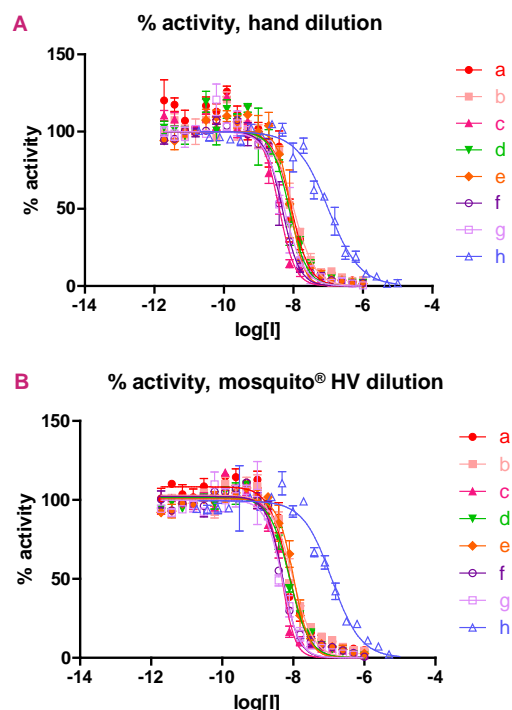
3. volume transfer accuracy



Linearity of volume transfer for mosquito HV. Data was obtained from 64 repeat volumes from 500 nL to 5 µL. % accuracy was within 2% and % c.v. was less than 3% across the volume range. Data was provided using the Artel MVS system.

4. applications

mosquito HV can be successfully employed for near assay serial dilutions using standard plates where volumes between 1-5 µL of serially diluted compound are required.



Comparison of dose response curves of compounds over a dilution series, set up using (A) manual dispensing versus (B) TTP Labtech's mosquito HV.

5. flexibility

mosquito HV is simple to use for a variety of applications:

- No set-up changes or recalibration for different protocols, plates or liquid types are required. Users simply swap between reformatting, plate replication, serial dilutions or assay-ready plate preparation by simply selecting a software protocol.
- Different plate types and formats can be used in the same protocol, selecting appropriate software. mosquito HV addresses SBS-format plates from any manufacturer.
- 5 plate position deck allows up to four daughter plates to be stamped from a mother plate quickly (<1.5 minutes per 384 plate) and efficiently (only 384 tips used).
- Four mother plates can be re-formatted into one higher density assay plate.

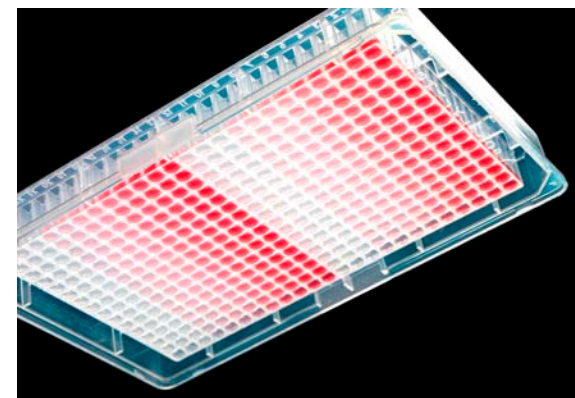


Plate demonstrating serial dilutions set up by mosquito HV

conclusion

- Positive displacement technology offers highly accurate and precise pipetting.
- Disposable micropipettes guarantee zero carry-over between samples.
- mosquito HV offers you the versatility to perform high speed and accurate microlitre pipetting with a volume range suitable for scale up, serial dilutions and assay or near assay ready plate preparation.
- mosquito HV can also reformat between different plate densities in the same protocol, accurately pipetting between 96-, 384- and 1536-well plates.
- mosquito HTS and HV can be employed for a wide range of chemical and biological-based applications, including compound and small molecule screening, cell- or bead-based assays, enzyme kinetics assays, ELISAs, molecular biology applications including rtPCR and qPCR set-up, RNAi screening and SNP genotyping.

