Formulatrix Mantis Liquid Handler

Standard Operation Protocol

Formulatrix Mantis

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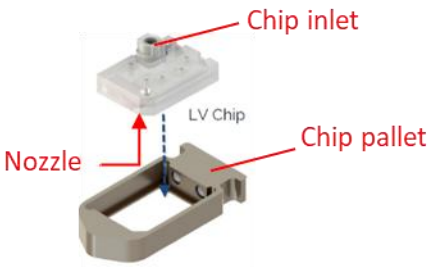
I. Initialization of instrument

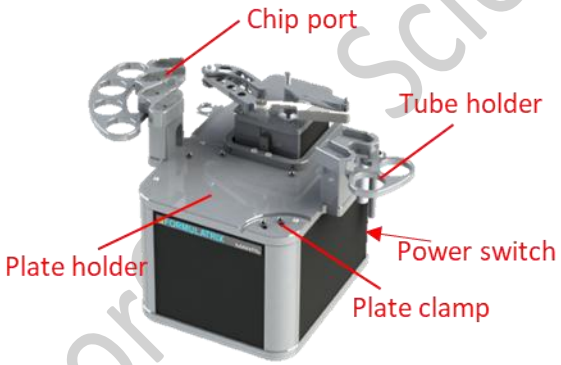
1. Turn ON

   ①Computer

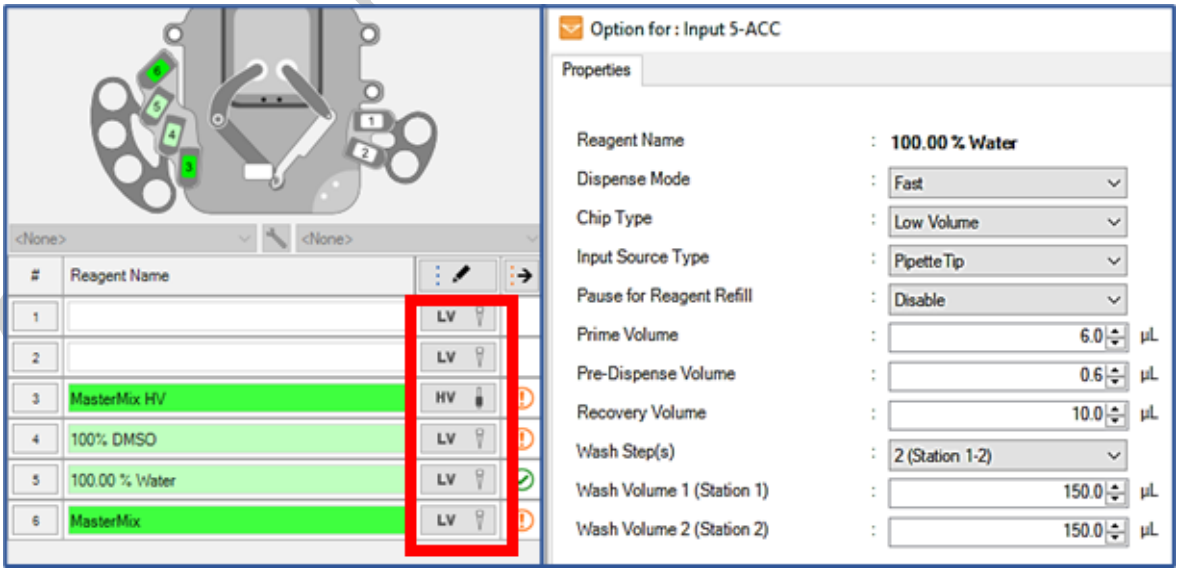
   ②Mantis Switch at the back

2. Install chip onto chip pallet and place on chip port.
   * Please be careful of the nozzle.



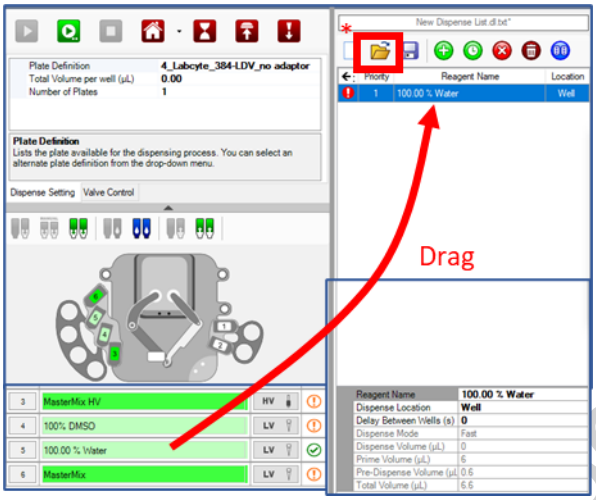


3. Use Kimwipe, MilliQ water and 75% Ethanol to clean the nozzle.
4. Put chips into corresponding chip port.
5. Make sure no plate or plate adaptor on Mantis platform. Launch Mantis software.
6. Load and check an appropriate chip setting.

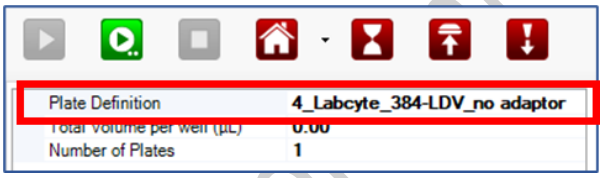


7. Load an appropriate reagent type to the dispense list by dragging along the arrow direction.

   * Dispense list can be imported in (.dl.txt), (.xls) or (.xlsx) format.

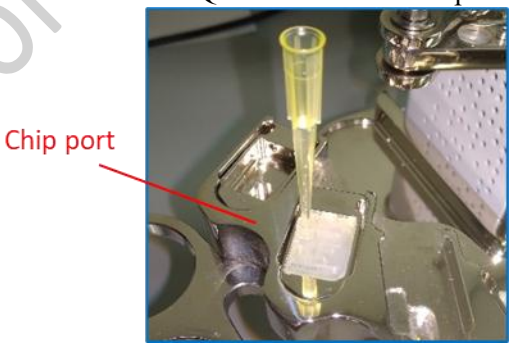


8. Choose an appropriate destination plate format.

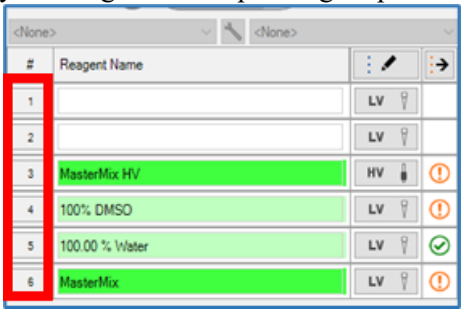


II. Ready the chips for dispense

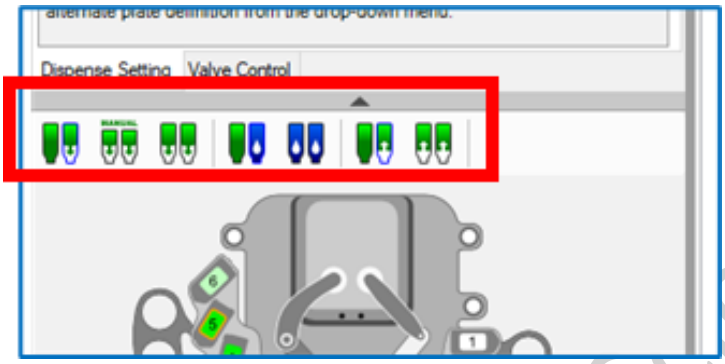
9. Load a 200 µL pipette tip with 150 µL MilliQ water and insert it onto the chip inlet.
   *Caution: the chip surface cannot be wet, use kimwipe to absorb all liquid spilled if needed.
   * Use DMSO instead of MilliQ water to wash if dispensing DMSO.



10. Select the chip from the chip port by clicking the corresponding chip number.



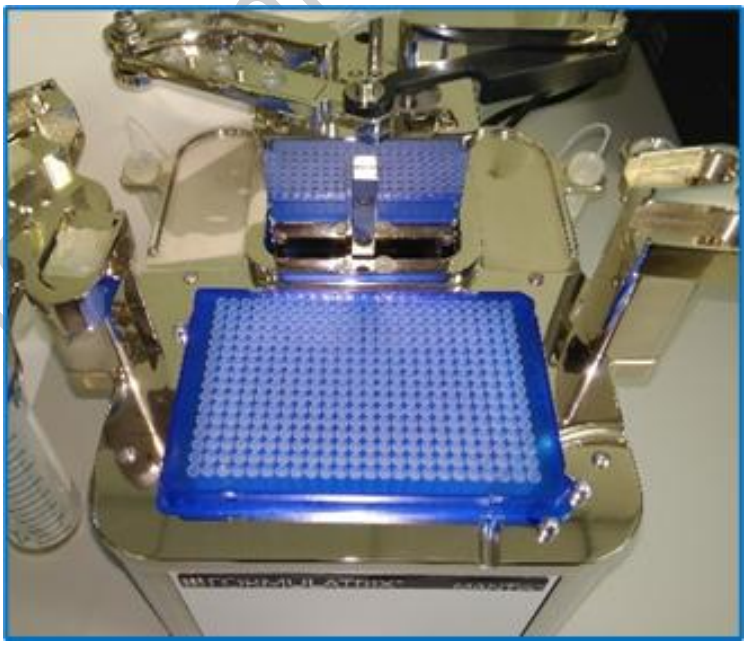
11. Clean the chip by holding **Manual Prime** until all MilliQ water is ejected or dispensing it on to a sealed plate.
    - For DMSO: put the test onto the plate holder,
      import C:\Users\User\Desktop\Dispense List\DMSO_test run.dl
      and Start to clean the chip. Skip step 12-14. Remove the DMSO on the tip if any observed.



12. Unload the chip by clicking the chip number again.
13. Click **Recover** to remove any residue liquid from the chip.
14. Remove the pipette tip from the chip.
15. Repeat Step 9-14 for all the chips to-be-used.

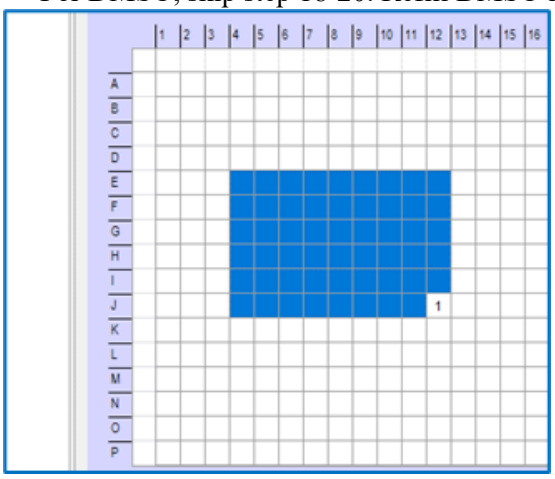
III. Dispense

16. Put the destination plate onto the plate holder.
    * Load the plate with adaptor only if indicated in the plate format.

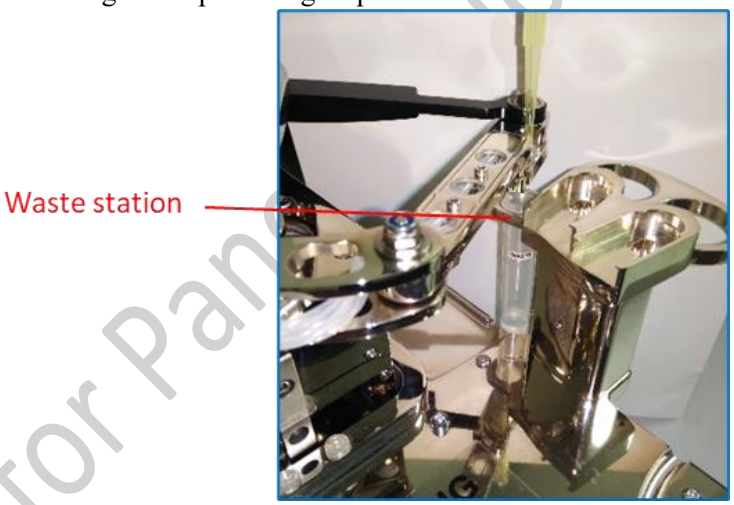


17. Select target wells and input dispense volume (in µL).
    * More than one reagent type can be loaded into a dispense list.
    * Dispense list can be imported in (.dl.txt), (.xls) or (.xlsx) format.

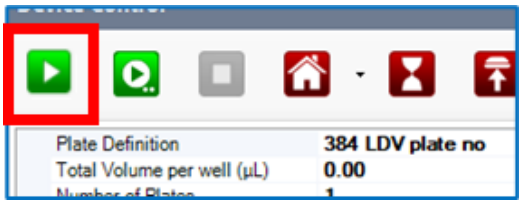
** For DMSO, skip step 18-20. Refill DMSO into the attached pipette tip if needed.



18. Unload the chip, load a (200 or 1000 µL) pipette tip with adequate volume of reagents to the chips.
    * Dead volume of the chip is 6 µL.
    * Preparation of 10% additional volume of reagent is recommended.
19. Select the chips from the chip port by clicking the corresponding chip number.
20. Hold **Manual Prime** until reagent droplet being dispensed into waste station is observed.



21. **Start** the run to dispense. Pause the run to refill the reagent by pipette tips if needed. Pause and then stop the run if needed.



IV. Recover and wash the chips

22. Remove the destination plate.
23. Ensure a pipette tip is inserted to the chip inlet and select a used chip, **Recover** reagent to the pipette tip.
24. Unload the chips. Remove the pipette tips filled with reagents with the help of pipetman to avoid spillage.
25. Load a 200 µL pipette tip with 150 µL MilliQ water, insert it onto the chip inlet and hold **Manual Prime** to eject all MilliQ water.
26. Clean the chip nozzle with kimwipe.
27. Clean the wash stations with kimwipe, MilliQ water and Ethanol.
28. **Wash** the chips.
29. Click **Recover** to remove any residue liquid from the chip.
30. Remove the pipette tip from the chip.
31. Repeat Step 23-30 for all the used chips.
32. For 3PFE chip, **Manual Prime** the chip with 35% Glycerol for storage.
33. Discard the liquid in the waste station into the waste container in the PCR hood.

V. Return the chips and power off Mantis

34. Remove the chips from the chip pallets and Mantis. Keep in dry condition.
35. EXIT Mantis Software, then turn OFF ③Mantis Switch.
36. Switch OFF ②Computer and ①Wall Socket.
37. Sign on Log Sheet.

Appendix

Reagent Name	Reagent	Chip code	Chip type	Dispense Mode	Liquid Class	Reserver	Prime Volume (µL)	Pre-Dispense Volume (µL)	Recovery Volume (µL)	Wash Volume 1 (µL)	Wash Volume 2 (µL)
Water	Water	SLV184876	LV	Fast	1-10 cP	Tip	6	0.6	10	150	150
DMSO	DMSO	PLV180468	3PFE LV*	Fast	DMSO	Tip	6	0.6	10	150	150
MM HV	qPCR Master Max	SLV184884	HV	Fast	MM	Tube	200	6	200	500	150
MM	qPCR Master Max	SLV184910	LV	Fast	MM	Tip	6	0.6	10	150	150

LV: Low Volume
HV: High Volume
*Use LV setting in the program instead of LV3P