Versette – Tip Height Adjustments for Labware

Automated Liquid Handlers
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Introduction

The Thermo Scientific™ Versette™ is a compact automated liquid handler that fits a wide range of research laboratories.

This technical note describes how to easily adjust the tip heights within a piece of Labware allowing the user to optimize a protocol in order to provide the best accuracy and precision possible. For detailed instructions to create/edit Labware, refer to the Labware Library section in the Thermo Scientfic™ Versette™ ControlMate™ User Manual.

There are four presets within the ControlMate Software for common Liquid Handling Depths. To optimize a protocol you can either choose a specific height or redefine Labware items to set a more defined height within a well based on the volume and liquid sample being used.

Required Equipment

- Versette system with six-stage assembly
- ControlMate Software, installed on computer or laptop with communications cable
- NTC Pipetting Module (installed)
- Versette 96- or 384-Channel Head (installed)
- DARTs Magazine (installed)
- Labware item

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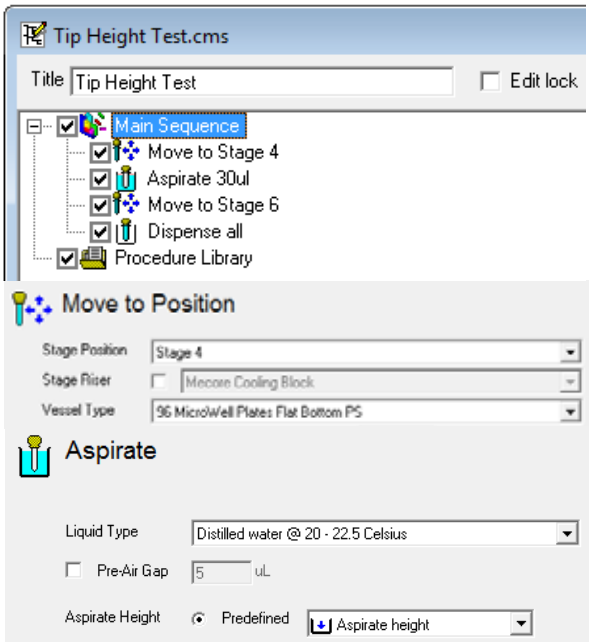
Procedure

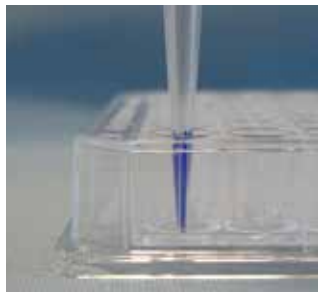
Follow these basic guidelines to quickly and accurately adjust the Liquid Handling Depths of any Labware consumable.



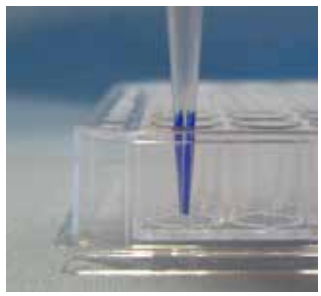
1. Install a pipetting head and load corresponding DARTs as required within ControlMate software; the software guides the user through the prompts.
   - ➤ Add-Ins > Change Pipetting Module
   - ➤ Add-Ins > Change Pipette Head and Tips
2. Create a short sequence in ControlMate software to test the tip height.
   - ➤ File menu, select New Sequence File
   - ➤ Highlight Main Sequence; ensure both 'Pre-Installed Pipette Head' and 'Pre-Installed Pipette Tip' boxes are checked with the appropriate head and tips that were installed.
   - ➤ Click Move, select Stage Position 4, select the correct Labware for the Vessel Type
   - ➤ Click Aspirate, select Stage Position 6, select one of the predefined heights to test:
     - Well Top
     - Well Bottom
     - Aspirate
     - Dispense
   - ➤ Click Dispense, select Stage Position 6, select the same predefined height chosen in previous step
3. Run the sequence. Once the tips lower into the Labware to aspirate, press the spacebar on the keyboard to pause the sequence as the tips approach the lowest point within the wells. Estimate the amount of change in mm you wish to raise or lower the tip relative to the top of the well.
4. Go to the Add-Ins menu and select Edit Labware Library.
5. In 'Vessel Selection,' select New. In the 'Similar To' field use the dropdown menu and select your current Labware from the list.
6. Select Load to populate all the pertinent fields with the current values for this Labware.
7. In 'Description,' modify the default name for this Labware so changes are not made to the default settings for this Labware item.
8. Based on your observations from Step 3, carefully adjust the appropriate value(s) for the Liquid Handling Depth selected. Raise or lower the tip the appropriate height within the well.

   Note: *Increasing the value positions the tip lower in the well, decreasing the value positions the tip higher in the well. Within the ControlMate Software, heights are all calculated from the well top.*
9. Select Save, then 'OK' when done.

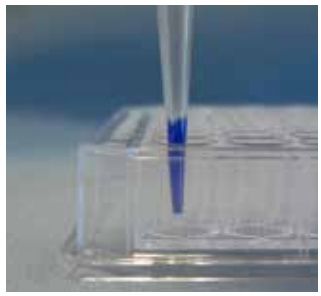
For the Liquid Handling Depths, there are three entries that can be optimized; Well Bottom height, Aspirate height, and Dispense height. Guidelines for entering measurements are as follows:



Well Bottom
Tip touches Well Bottom



Aspirate
Tip is 0.5 mm off Well Bottom



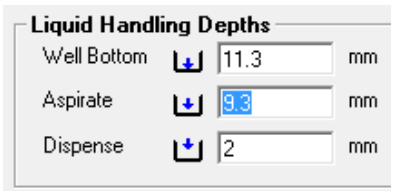
Dispense
Tip is 1.0 mm off Well Bottom

HINT: Measurements listed above are guidelines, however, you should optimize the Liquid Handling Depths (heights) for a sequence by adjusting this value to a more specific measurement to meet the needs of your application based on sample viscosity and the volume of the sample contained in the well.

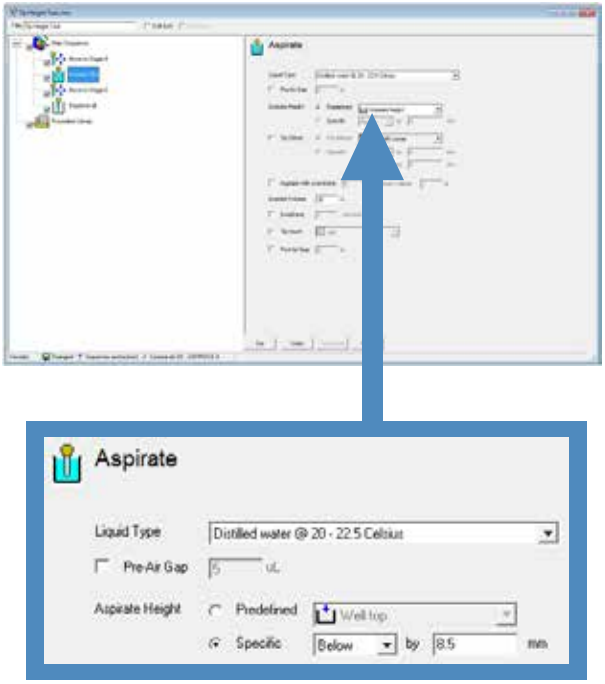
10. Select your new Labware name in the Move To Position step within the sequence.

    Note: *If the name does not appear in the drop down, save the protocol, and reopen it to refresh the info.*

11. Repeat the sequence as in Step 3 above, using the spacebar to check the new tip positions based on your prior changes. Once the final value has been determined, add this new value to the Labware item as appropriate in the Labware Library under the appropriate Liquid Handling Depth.



*Optional Method - Located within the Aspirate/Dispense step of a sequence: Optimize tip positions by selecting 'Specific' within the Aspirate or Dispense heights section followed by 'Below' as these adjustments are also relative to Well Top.



Caution: *When using a "Specific Height" in a sequence, ensure the vessel type selected in the "Move To Position" that proceeds the "Aspirate / Dispense" step uses this same specific liquid handling depth as appropriate. Verify the same specific height is entered for any other steps that use it in the sequence for consistency.*

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