



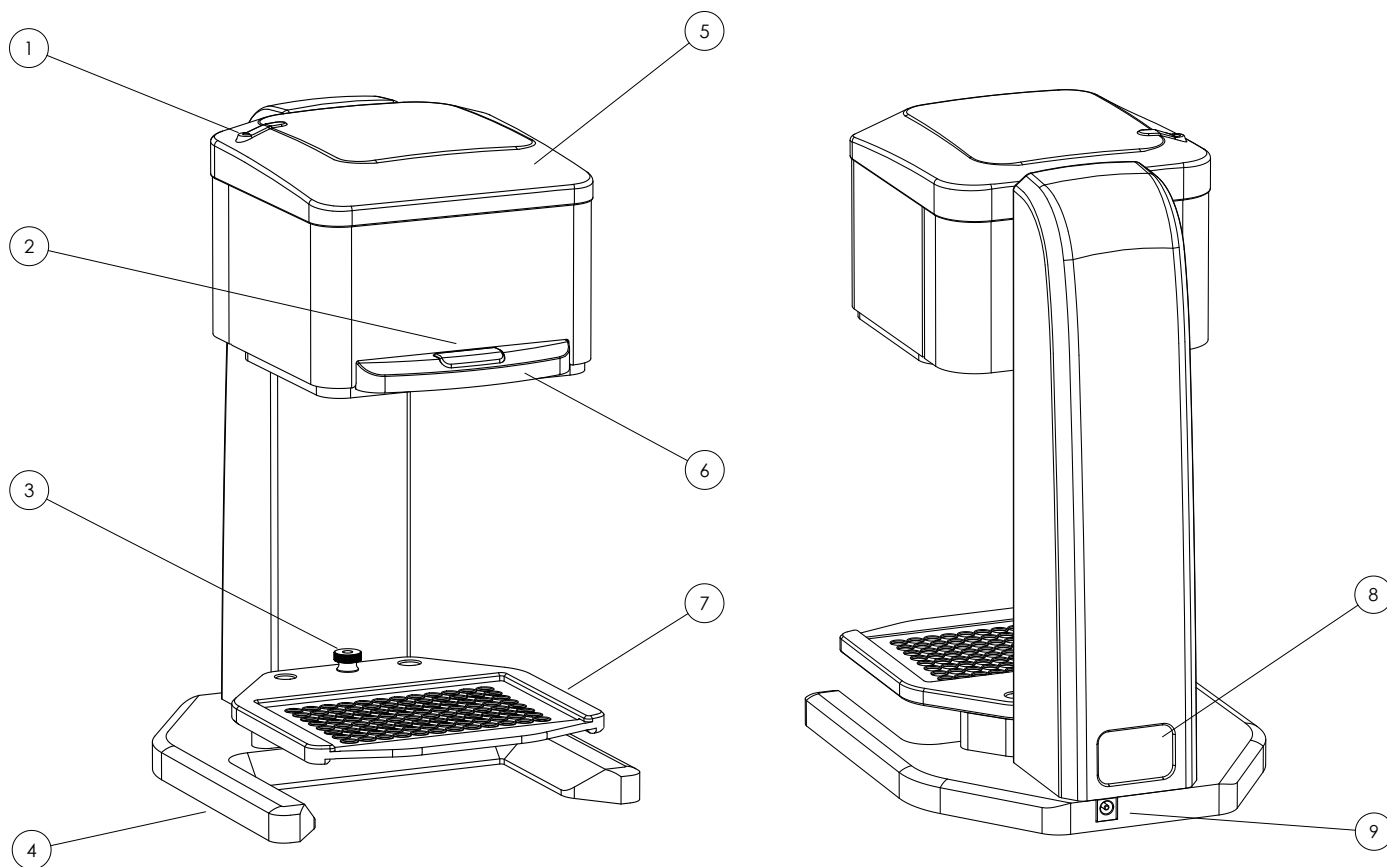
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<b>1</b>	<b>Status LED</b>	<p><b>Blue</b> - Instrument is on, and connected to a tablet</p> <p><b>Red</b> - Instrument is on, but <b>NOT</b> connected to a tablet</p> <p><b>Flashing Red</b> - Instrument is on, <b>NOT</b> connected to a tablet, and has gone into Power Save Mode</p>
<b>2</b>	<b>RUN Button</b>	Tactile button, press for all operations (see <a href="#">Section 4</a> )
<b>3</b>	<b>Nest Thumb Nut</b>	Loosen and remove to convert nest from 96 to 384 configuration, and vice versa (see <a href="#">Section 4.7</a> )
<b>4</b>	<b>Base</b>	Solid machined base with opening for reservoir
<b>5</b>	<b>Pipetting Head</b>	Easily movable and re-positionable
<b>6</b>	<b>Handle</b>	Grab this area to move the pipetting head up/down
<b>7</b>	<b>Convertible Nest</b>	Solid platform for use during operation, can be converted for use in 96/384 configuration (see <a href="#">Section 4.7</a> )
<b>8</b>	<b>Name Plate</b>	ID label with Serial Number (see <a href="#">Section 1.3</a> )
<b>9</b>	<b>Power Connector</b>	Connect only to the power supply provided

# 1. Introduction

Congratulations on your purchase of the Avidien MicroPro 300 pipetting system. This innovative compact instrument packs an enormous feature set that offers unprecedented capability and value.

## 1.1 Features

### Multi-Function Pipetting

There are a total of six different pipetting functions, including Pipette with Mix, Repeat Dispense, Variable Dispense, Dilute with Mix, Multi-Aspirate with Mix, and Custom.

### Intuitive Touchscreen User Interface

Large, easy to use touchscreen interface with direct access to all major functions on one screen.

### RingLock Tip Loading System

Patented tip load and eject system that is simple and easy to use.

### PDR Function (Pipetting Depth Recall)

Easily save, control and recall the pipetting depth of each plate, container or reservoir.

### Touchless Tip Ejection

Easily eject used tips without the need to touch them directly, avoiding possible contamination.

### Saved Programs

Save and organize a practically limitless number of programs, for quick and easy use.

### 10x Speed Control

Ten unique levels of control over both aspirate and dispense speeds.

### 96/384 Convertible Nest

Easily convert the nest for either 96 or 384 channel pipetting.

## 1.2 Security and Connections

The instrument and tablet communicate wirelessly via a Bluetooth connection. The connection is controlled through the MicroPro App. For more information, see [Section 3](#) below.

The application itself can be password protected, but if a higher level of security is required then the standard features of the tablet are available. Please use those to disable outside connections such as WiFi or add password protection to the tablet itself. However make sure to keep Bluetooth enabled, otherwise the tablet will not be able to connect to the instrument.

## 1.3 Name Plate

The instrument has a single ID label, located on the back of the instrument. This label contains all the necessary regulatory markings as well as the Model and Serial Number of the instrument. Below is an image of what the label will look like:



## 1.4 Warranty

### One Year Limited Warranty

The MicroPro 300 is warranted to be free of defects in materials and workmanship for a period of one (1) year from the delivery date. Avidien Technologies, Inc. will repair or replace any defective components at its discretion, during this period. New, repaired or refurbished devices and components may be used for warranty replacements. Warranty repair and/or replacement does not extend the time period of the original warranty.

### Exceptions

This warranty does not apply to damage or defects due to misuse, neglect or accident. This includes but is not limited to: operation outside the intended use or environmental specifications; failure to follow the instructions in this user manual; use of incompatible tips or accessories; use with incompatible liquids, solvents or other materials; modification or unauthorized repair of the instrument. The owner is responsible for following the standard cleaning and maintenance procedures as defined by this user manual.

## Claims

Warranty claims should be submitted to Avidien Customer Service, or via email to [support@avidien.com](mailto:support@avidien.com). And, all claims must be submitted prior to the expiration of the aforementioned warranty period. The address of the nearest authorized service center will be provided, but the owner is responsible for any packaging or shipping charges. The service center will repair the instrument or provide a replacement as quickly as possible. The packaging and shipping of the instrument back to the owner will be covered by the service center.

## Service Agreements

A service agreement that would cover the cost of most repairs or replacement for the life of the agreement, may be available. Please inquire for more details.

# 2. Safety

Read all safety warnings and precautions prior to installing, operating or servicing this instrument. Always operate the MicroPro 300 in accordance with this User Manual.

## 2.1 Intended Use

The MicroPro 300 is a semi-automated liquid transfer system designed for use in laboratories for research and development, as well as training and education. This system is capable of accurately and precisely transferring liquid into and out of 96/384 well micro-plates. The functional volume range is from 15 uL to 300 uL. The applications include, but are not limited to, clinical research, chemistry, life sciences, and bio-technology.

This pipetting system is intended for indoor use only, and should only be operated by qualified and appropriately trained personnel. Any operator must read this operating manual carefully prior to use, and must follow all the instructions and warnings included herein.

This manual is considered part of the system, and should be kept close by and readily accessible. The latest version of this manual, in all available languages can always be found on [www.avidien.com](http://www.avidien.com).

## 2.2 Terms and Symbols

All safety warnings and cautions are identified using the following terms and symbols:

### **WARNING**

A hazardous situation with medium to high risk, that could possibly result in serious injury (or death) as well as damage to the instrument and/or laboratory.

## CAUTION

A hazardous situation with low risk, that could result in minor injury, damage to the instrument and/or laboratory, data loss, or improper functionality.

## NOTICE

A situation that may lead to material damage, damage to the instrument and/or laboratory, data loss, or improper functionality.



### General Hazard

Refer to the User Manual.



### Crushing Hazard

Risk of personal injury.



### Electrical Hazard

Risk of electric shock.

## 2.3 Caution - General Use



### CAUTION

Keep control over the pipette head while lifting or moving the instrument. It moves relatively easily and could present a pinching hazard.



### CAUTION

This instrument should only be used for the intended purpose as stated in [Section 2.1](#). Any other use may create a hazardous condition, and lead to instrument damage and/or improper functionality.

The use of accessories and spare parts other than those approved by Avidien, may create a hazardous condition, and lead to instrument damage and/or improper functionality.

## 2.4 FCC Statement

The MicroPro 300 is a Class A device, as defined by FCC Title 47, Part 15, Sub-class C. This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



## 2.5 Declaration of Conformity

**Avidien Technologies, Inc.  
Hudson, MA**

*Declares that the following product:*

**MicroPro 300**

*Conforms to the following:*

Safety:	UL/CSA/EN 61010-1:2010
Emissions:	FCC Part 15 / EN55011 (Class A)
Immunity:	EN61326-1:2013
	EN6100-3-2 Harmonics
	EN6100-3-3 Flicker
	EN6100-4-2 ESD
	EN6100-4-3 Radiated Immunity
	EN6100-4-4 EFT/Burst
	EN6100-4-5 Surge
	EN6100-4-6 Conducted Susceptibility
	EN6100-4-11 Dips/Dropouts

*The reports and supporting documentation that demonstrate adherence to these standards are maintained by Avidien, have been verified by the Compliance Management Group, and are available for review upon request.*



## 3. Setup

The MicroPro 300 pipetting system is surprisingly simple to setup. Follow the instructions below to get started.

### 3.1 Unpacking the Box

Everything you need to get started is included with your new MicroPro 300 instrument. Inside the well-packed box, you will find the following:

1. MicroPro 300 Instrument
2. Power Supply
3. Tablet with pre-loaded MicroPro App
4. Case of Standard Tips
5. User Manual

Check the box to ensure all the items are present, and that there are no signs of shipping damage. If any items are damaged or missing, please contact Avidien Customer Service at (978) 634-1403 or [support@avidien.com](mailto:support@avidien.com).

*NOTE: The tablet stand will ship separately in its own packaging.*

Carefully remove all the items from the box. Use caution when removing the instrument. It is not heavy, but the head will be free to move once removed from the protective foam. Keep the box and packaging, as it will be useful for transporting the instrument and/or returning it for authorized service.

### 3.2 Instrument Setup

The ideal workspace for the Avidien MicroPro 300 is a clean dry bench that is near an electrical outlet and protected from vibration, drafts, and direct sunlight.

Set the instrument on the bench, and plug in the provided power supply. The power supply will be a small box with a cord on each end, similar to a laptop power supply. Simply plug the round end into the back of the instrument, and the standard power plug into the electrical outlet. Once plugged in, the instrument will automatically power up.



#### **WARNING**

To reduce the risk of electric shock, only use the power supply and cord provided. Do not modify the power supply or cord in any way. Ensure that the power supply, cord, and connector on the instrument are undamaged prior to use.

### 3.3 Tablet Setup

Remove the tablet from its packaging. Please be sure to read the user manual provided by the manufacturer, and follow the instructions for powering on and setting up the tablet.

It is recommended to fully charge the tablet prior to the first use. And, if possible, keep it plugged in during use to ensure there are no interruptions while using the instrument.



*NOTE: The MicroPro App will already be pre-installed on the tablet. This icon will be on the main screen upon startup.*

To get started, simply press on the MicroPro App Icon to open the User Interface. See [Section 4](#) below for more information on operation.

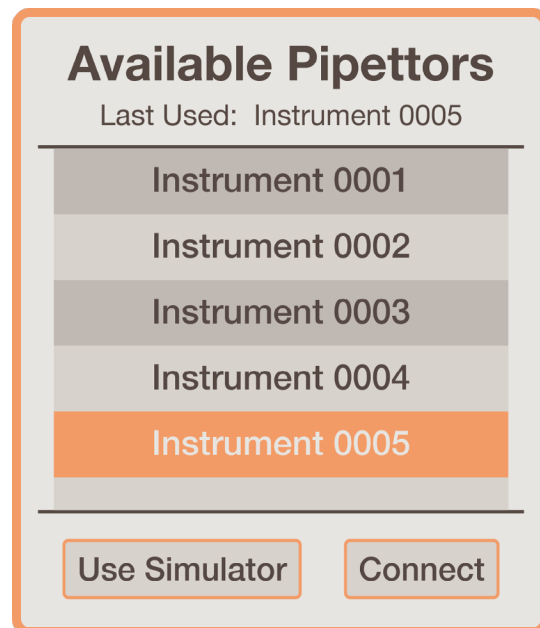
## 4. Operation



### 4.1 Connection Screen

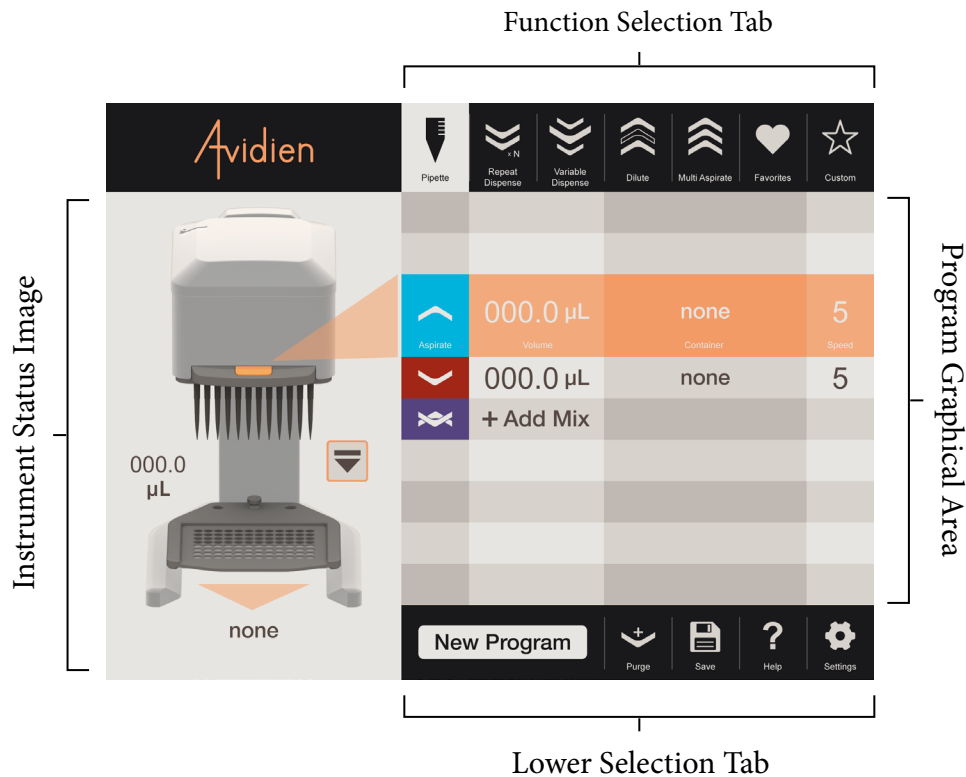
#### 4.1.1. Available Pipettors

By default, when starting up, your tablet will try to connect to the last pipettor that it was connected to. However, if it is unable to find that particular instrument and/or you press the Cancel button, the screen below will show a list of all available pipettors within range of the wireless connection. You can then select the desired instrument and choose to connect. Or, you can choose to Use Simulator.



### 4.2.3. Using the Simulator

If you choose to use the Simulator, all the features of the app will still be available. You will be able to create/modify/save programs, as you normally would. In addition, while in Simulation Mode the RUN button will always be available on the main screen. This will actually allow you to dry-run any program without needing to be connected to an instrument.



## 4.2 Interface Overview

### 4.2.1. Function Selection Tabs

Across the top of the main screen are the Function Selection Tabs. There is a tab for each of the various pipetting modes. Clicking on any of these tabs will bring you to that specific mode. In addition, the second to last tab is for the Favorites section. Clicking here will bring you to the Favorites section where all your saved programs reside. The last tab is for Custom Programs, where you have the freedom to create any type of program you might need.

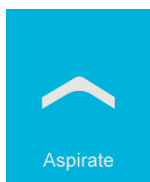
### 4.2.2. Program Graphical Area

This area shows all the steps of the program, in an intuitive spreadsheet style format. The active step is highlighted in orange and larger than the other steps. At any given time, if the run button is pressed, the active step is what will be executed. All the steps below the active step are what comes next; in order from top to bottom. As each step is executed, they move upward. The previous step will move above the active step and be greyed out.

Within each step, there are four columns. From left to right, these are the Step Type Icon, Volume, Container Name, and Speed. The only exceptions are in Mix steps and within some of the special steps inside Custom Programs. For a Mix Step, the Container Name field shows the total number of mixes.

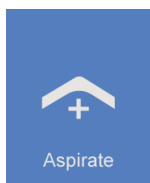
To edit a specific step, simply click anywhere on that step and a pop-up will appear. This will allow you to edit all the parameters of that step. Depending on the mode, various other options may be available; such as Add Mix, Add Dispense, Edit All, etc. For more details, see the specific pipetting mode sections.

Below, are each of the Step Type symbols and their definitions. For more details on how each one is used, see [Section 4.3](#) below.



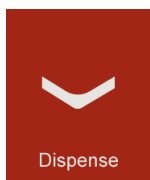
### **Aspirate**

Represents a normal aspirate step.



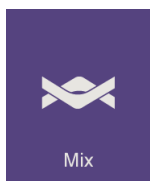
### **Aspirate (Reverse Pipette)**

Very similar to a normal aspirate step, but in this case a small extra amount of liquid will be added to the desired volume. This is used when there are multiple dispenses in order to ensure accuracy.



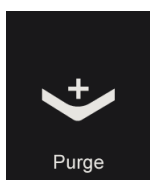
### **Dispense**

Represents a normal dispense step.



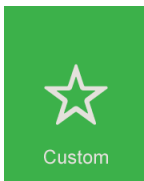
### **Mix**

Represents a normal mix step.



### **Purge**

Represents a purge step. This step type is only available when creating a custom program.



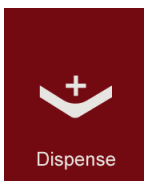
## Custom

This is shown as a placeholder during the creation of a custom program. Once the step type has been defined, this icon will be replaced by the appropriate symbol.



## Instructions

This step, found only under custom programs, is used to display instructions on the screen for the user during the program.



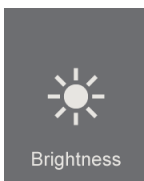
## Dispense w/ Blowout

Very similar to a normal dispense step, but in this case the operation continues through the end of the dispense purging any remaining liquid that may be in the tips.



## Tip Load

Represents a normal tip eject and load cycle. This step type is only available in custom programs.



## LED Brightness

Represents a change to the LED brightness; only available in custom programs.

#### 4.2.4. Lower Selection Tabs

Across the bottom of the screen are the Lower Selection Tabs. The first tab or area shows the name of the current program being run or edited. If the program has been edited but not saved, a star ‘\*’ will appear next to the name. Pressing on this area will take you straight to the Favorites Section.

The next tab will be either the Clear or Purge function. If a program is only being edited and has not yet started running, then the Clear function will be displayed. Pressing on this will clear the current program from the screen, providing a clean slate with which to start over. However, a warning will be displayed just to make sure you really intended to do this. If a program has already started running, then the Purge function will be displayed. Pressing on this will cancel the program and purge all liquid from the tips. Again, a warning will be displayed to ensure this is really what you intended to do.

The next tab is the Save Program function. For more information on this feature, see the [Favorites](#) section below. Then, there is the Help function. Pressing this will take you to the Help screens. Here you can find the answers to any questions regarding how the unit works. Finally, the last tab is the Settings tab. For more information, see the [Settings](#) section below.

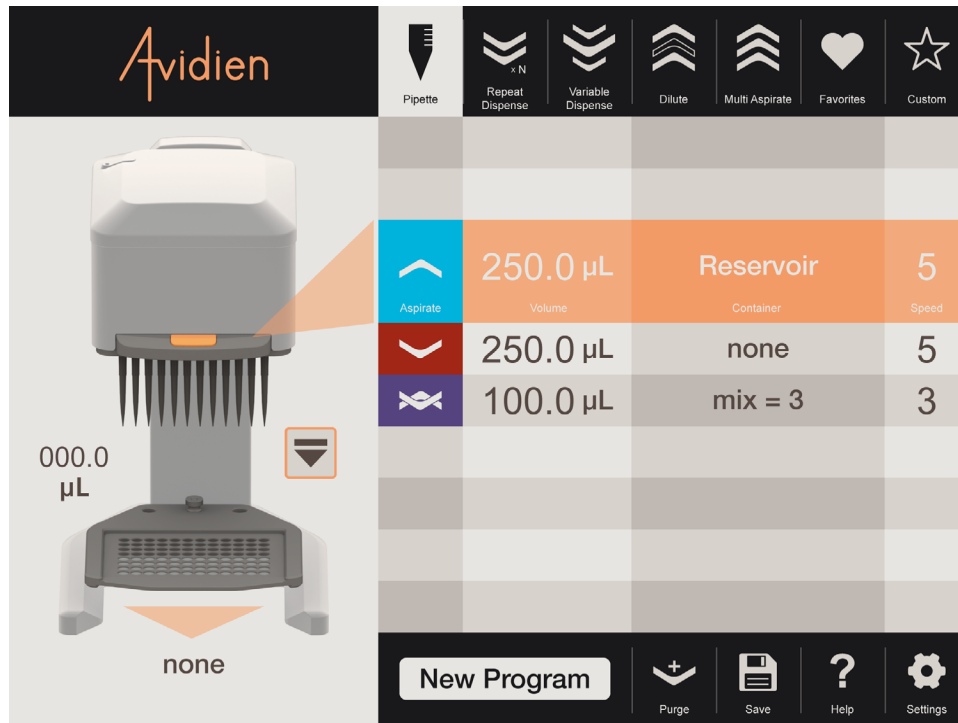
#### 4.2.5. Instrument Status Image

On the left hand side of the screen, there is an image of the instrument. This will show the current status of the unit and will actively update during the running of any program.

The name of the instrument will be displayed on the head of the pipettor. The liquid level in the tips will be shown on the left and further defined by the tips filling up with blue liquid in the image. At the bottom of the image, the name of the container that corresponds with the active step in the program will be shown. If no specific container is selected, then the area will be left blank. To the right of the image, next to the tips, will be the EJECT button. For more details, see the [Tips](#) section below.

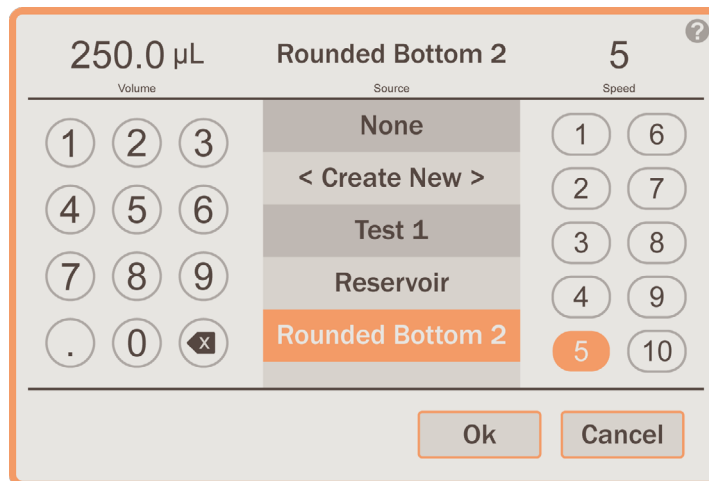


## 4.3 Pipetting Functions



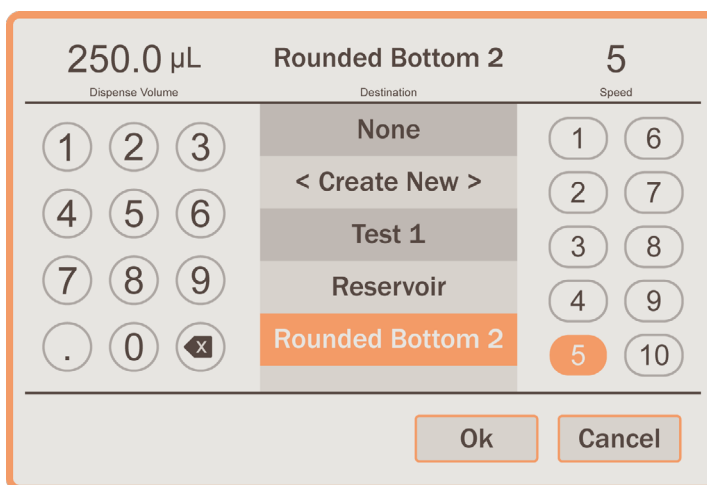
### 4.3.1. Pipette with Mix

The standard Pipette with Mix function will allow you to complete a single aspirate and then dispense with or without a mix. Simply press on each step to edit them. When pressing on the Aspirate step, the following pop-up will appear:

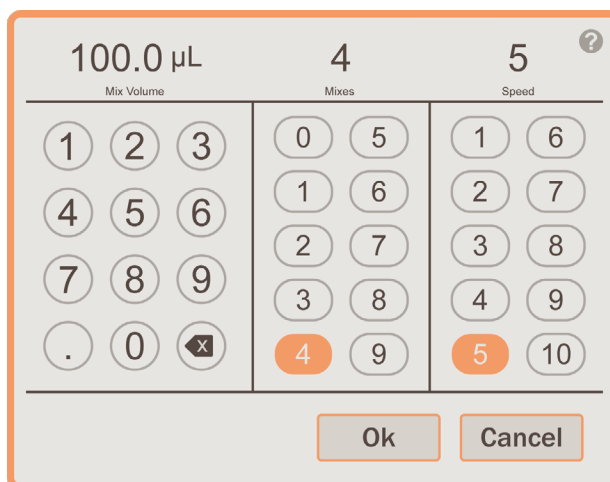


Within this pop-up window, you can edit the volume, select the desired container, and edit the speed. To edit the volume, simply use the keypad to enter in the desired volume in  $\mu\text{L}$ . From the list of containers, you can select any of the pre-existing containers, select none, or choose to create a new one. For more details on creating a new container, see [Section 4.6](#) below. Note that this is the container that liquid will be aspirated from.

To edit the speed, just select the desired value from 1 to 10. Once you have finished making your selections or changes, simply press OK to exit the pop-up window. If you would like to undo your changes, simply press CANCEL to exit the pop-up window.



Pressing on the dispense step will display the pop-up window above. Similarly to the aspirate pop-up window, you can edit the volume, select a container, and edit the speed. Since this is a simple pipette program, the volume is automatically carried over from the aspirate step. Editing it here will update it for both steps, since it must always be equal in this type of program. The container and speed functions work identically, except this container will be the one that liquid is dispensed into.



To add a mix step, press on the Add Mix step located just below the dispense step. The above pop-up window will be displayed. Here you will be able to edit the mix volume, the total number of mixes, and the speed.

*NOTE: If you would ever like to remove a mix step from a program after it has been added, simply change the number of mixes to zero and press OK.*

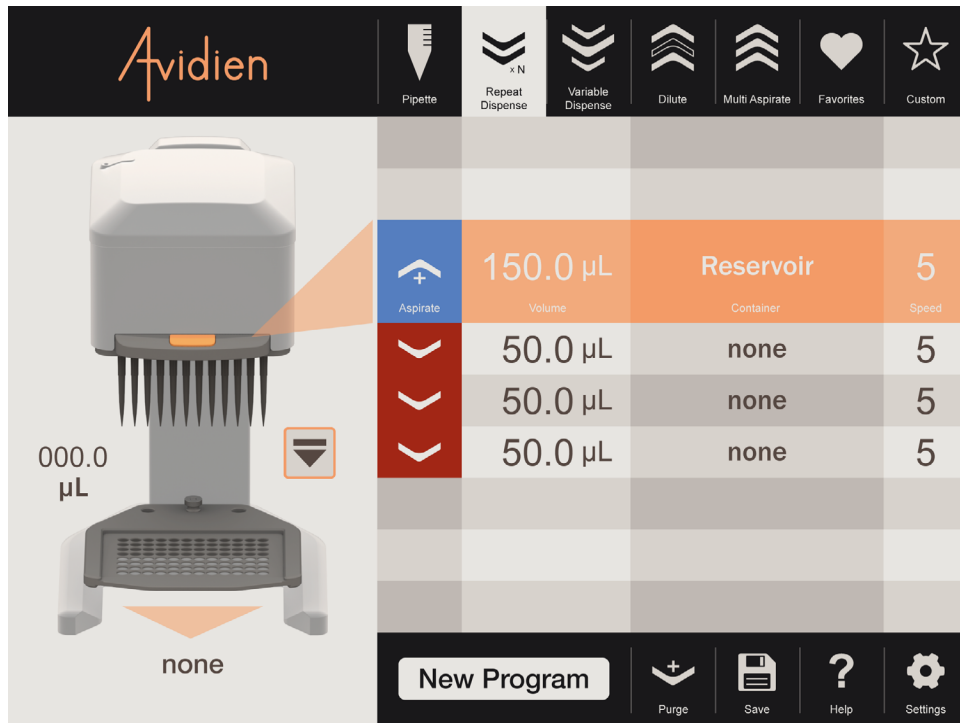
Once you have the setup completed, you are now ready to run the program. Below is a series of steps, walking you through how to run a simple pipette program:

1. Verify that the appropriate tips are loaded.
2. Ensure the selected aspirate container is either in the nest or in the reservoir area.
3. Grab the handle and slowly lower the head until it is at the desired height or all the way to the Z-Stop if you are using a saved container. (see [Section 4.6](#))
4. Press the RUN button on the front of the instrument to aspirate.
5. Raise the head up, so that the tips are out of the liquid and you have room to change the container.
6. Ensure the selected dispense container is either in the nest or in the reservoir area.
7. Grab the handle and slowly lower the head until it is at the desired height or all the way to the Z-Stop if you are using a saved container.
8. Press the RUN button on the front of the base unit to dispense.
9. Raise the head up, so that the tips are out of the liquid. Then press the RUN button to return as directed.

### **CAUTION**

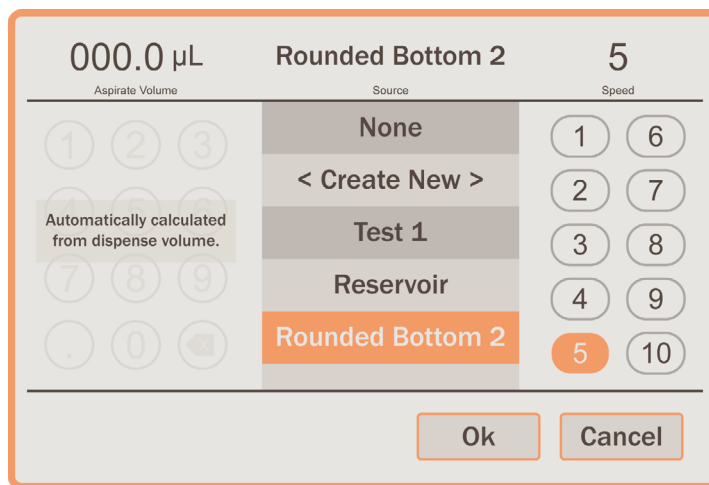
The tips must be out of the liquid otherwise you risk sucking liquid back up into the tips. (see pop-up window below)





#### 4.3.2. Repeat Dispense

The Repeat Dispense function will allow you to complete a single aspirate and then dispense a series of equal amounts. The default is two dispense steps. Similarly, press on each step to edit them. When pressing on the aspirate step, the following pop-up window will be displayed:



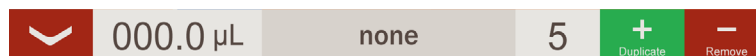
Within this window, you can select the desired container and edit the speed. However, the aspirate volume is calculated directly from the dispense values and is therefore not editable here.

Pressing on any one of the repeat dispense steps will bring up the pop-up window below. Here you can edit the repeated volume for each dispense, select the desired container, edit the speed, and choose how many repeat dispenses will be completed. The system is limited to a maximum of 15 repeat dispenses, and depending on the volume entered may be restricted further based on a total available volume of 300  $\mu\text{L}$ .

Dispense Volume	Destination	Speed	Repeats
50.0 $\mu\text{L}$	Rounded Bottom 2	5	3
1 2 3	None	1 6	1 6 11
4 5 6	< Create New >	2 7	2 7 12
7 8 9	Test 1	3 8	3 8 13
. 0 $\times$	Reservoir	4 9	4 9 14
	Rounded Bottom 2	5 10	5 10 15

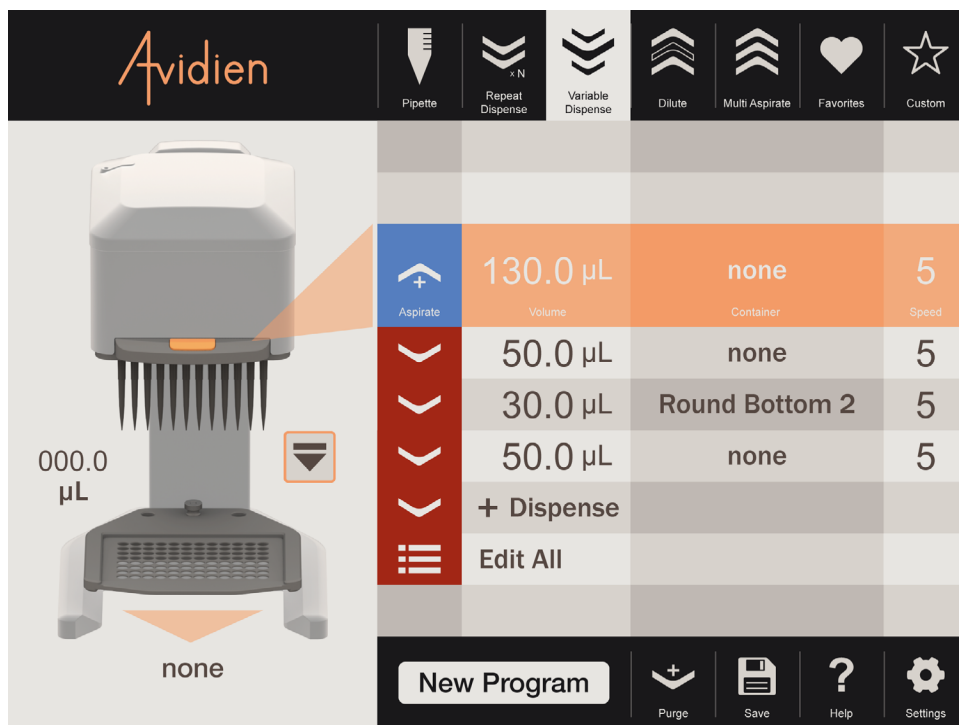
Ok Cancel

For a fast and easy way to add or remove dispense steps, simply swipe one of the steps to the left. This will reveal a green DUPLICATE button as well as a red REMOVE button. Pressing the DUPLICATE button will add a copy of that step below the step that was swiped. Pressing the REMOVE button will delete that step.



*NOTE: If there are only two steps, then only the DUPLICATE button will be available. This is because there must always be at least two dispenses in a Repeat Dispense program.*

Running a Repeat Dispense program is very similar to the simple pipette program. The main difference is that there will be multiple dispense steps of equal volume. However there will also be a Purge step at the end, in order to get rid of the small extra volume that was aspirated in order to ensure repeat dispense accuracy.

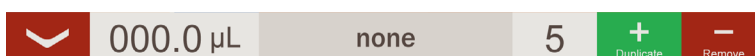


### 4.3.3. Variable Dispense

The Variable Dispense function will allow you to complete a single aspirate and then dispense a series of variable amounts. The default is two dispense steps. Similarly, press on each step to edit them. When pressing on the aspirate step, the pop-up window and options displayed will be the same as that shown for the Repeat Dispense function. Again, the aspirate volume will be calculated based on the dispense volumes.

Pressing on a dispense step will bring up the standard dispense edit pop-up window, identical to that of the simple pipette function. The main difference is that each dispense step will add up to generate the total aspirate volume. The default is two steps, but to add more simply press on the '+ Dispense' row. Pressing on this row will bring up the same dispense pop-up window. The system will automatically calculate the total volume, and will appropriately restrict the dispense steps so as they stay within the available volume of the instrument.

For an even faster and easier way to add or remove dispense steps, simply swipe one of the steps to the left. This will reveal a green DUPLICATE button as well as a red REMOVE button. Pressing the DUPLICATE button will add a copy of that step below the step that was swiped. Pressing the REMOVE button will delete that step.



*NOTE: If there are only two steps, then only the DUPLICATE button will be available. This is because there must always be at least two dispenses in a Variable Dispense program.*

Dispense Volume	Destination	Speed
000.0 µL	Rounded Bottom 2	

1	000.0 µL	none	5
2	000.0 µL	none	5
3	000.0 µL	none	5
4	000.0 µL	none	5
5	000.0 µL	none	5

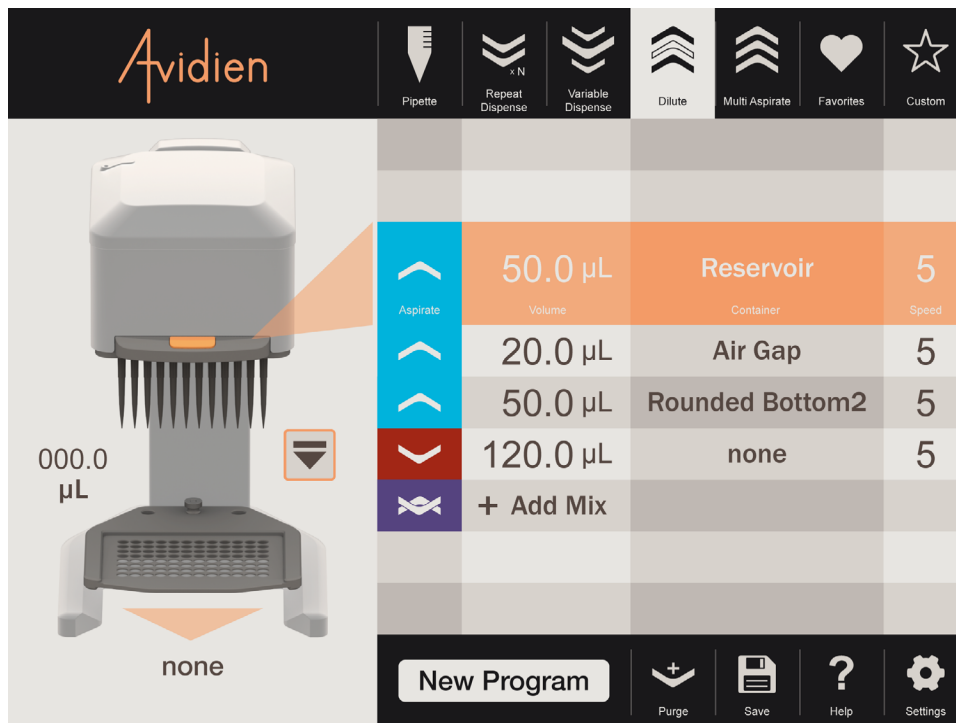
Select parameters above.  
Choose steps on left.  
Press **Apply** to assign those values to the selected steps.

Apply Undo

Back Select All Ok Cancel

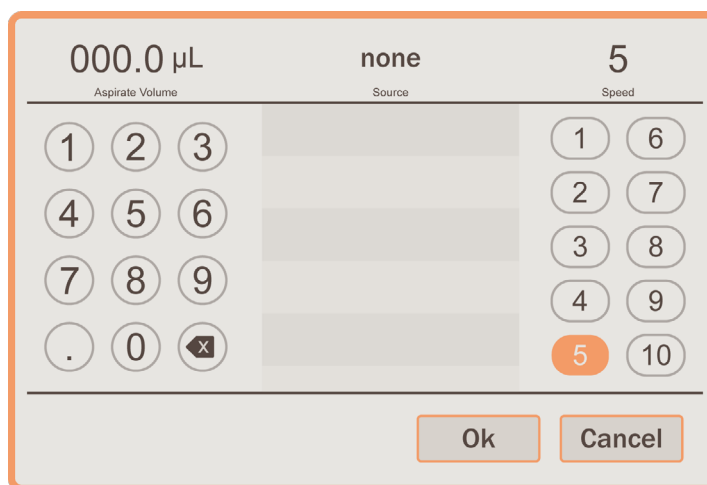
Another option for editing all the dispense steps at once, is available by pressing the 'Edit All' row when that feature is enabled. The pop-up window above will be displayed. This single window will allow you to edit all the aspects of every step at the same time. For more complex operations this option can be a valuable time saver. This feature can be enabled by checking the 'Allow Edit All' box on the Pipetting screen within Settings. (see [Section 4.8.2](#) below)

Running a Variable Dispense program is very similar to a repeat dispense program. And similarly, there will be a Purge step at the end.



#### 4.3.4. Dilute with Mix

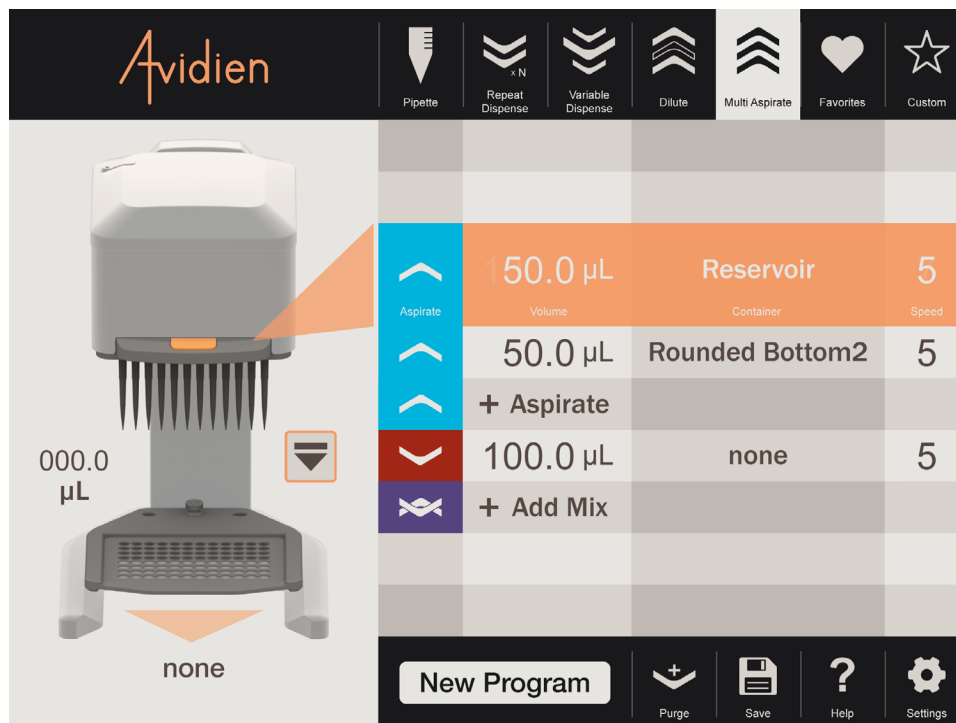
The Dilute with Mix function will allow you to complete two aspirates with an air gap in between and a single dispense, with or without a mix. Pressing on either the first or third aspirate step will bring up a pop-up window identical to that of the standard simple pipette function. Pressing on the second aspirate will be similar, except that the container will be pre-defined as 'none' and cannot be changed.



Pressing on the dispense or add mix step will bring up pop-up windows that are also identical to the simple pipette with mix function. Except that the dispense volume is not editable because it is calculated automatically from the total aspirate volume.



Running a Dilute with Mix program is slightly different, as there will be multiple aspirate steps and only a single dispense with or without a mix. And, the second aspirate step will always be defined as an Air Gap. This means that when it comes time to aspirate, the tips should be floating in space up and out of any liquid so that only air is drawn up into the tips. After that the dispense and mix steps are identical to a simple pipette program.



#### 4.3.5. Multi-Aspirate with Mix

The Multi-Aspirate function will allow you to complete multiple aspirate steps and then a single dispense with or without mix. This is similar to the Variable Dispense function but just aspirates instead. So, pressing on any one of the aspirate steps will allow you to edit that step.

Pressing on one of the aspirate steps will bring up a pop-up window that is identical to those of the Simple Pipette with Mix program. And similar to Repeat and Variable Dispense programs . . . to add or remove aspirate steps, simply swipe one of them to the left. This will reveal a green DUPLICATE button as well as a red REMOVE button. Pressing the DUPLICATE button will add a copy of that step below the step that was swiped. Pressing the REMOVE button will delete that step.

*NOTE: If there are only two steps, then only the DUPLICATE button will be available. This is because there must always be at least two aspirates in a Multi-Aspirate program.*

Pressing on the dispense or add mix step will bring up pop-up windows that are identical to the simple pipette with mix function. Except, that the dispense volume is not editable because it is calculated automatically from the total aspirate volume.

000.0  $\mu\text{L}$      Rounded Bottom 2   

Aspirate Volume                      Source                      Speed

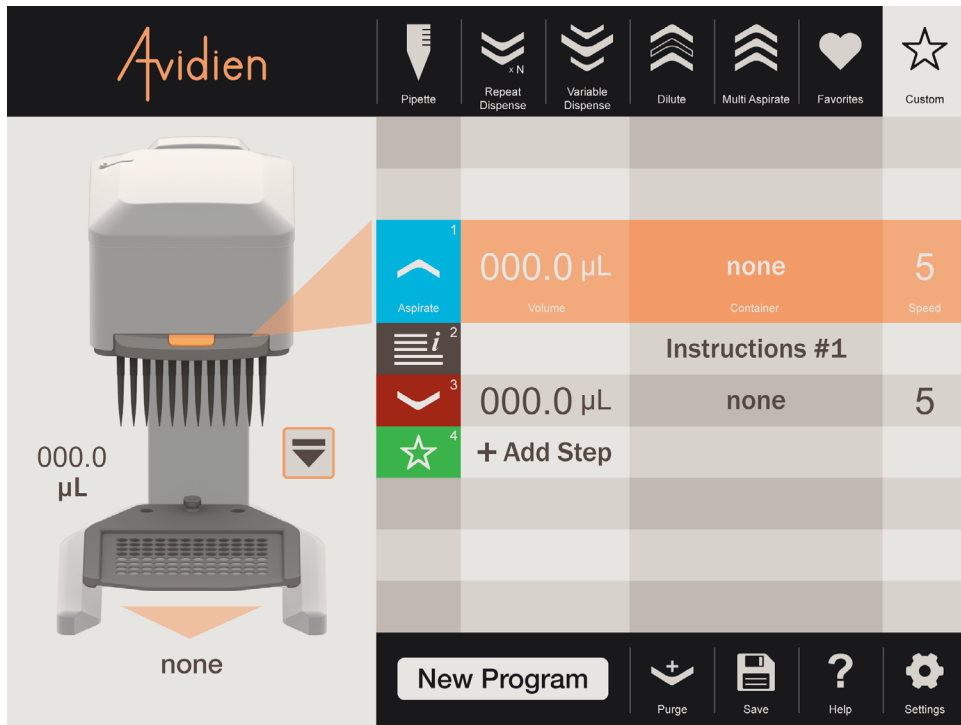
1	2	3	None	1	6
4	5	6	< Create New >	2	7
7	8	9	Test 1	3	8
.	0	$\times$	Reservoir	4	9
			Rounded Bottom 2	5	10

1	000.0 $\mu\text{L}$	none	5	Select parameters above. Choose steps on left. Press <b>Apply</b> to assign those values to the selected steps.
2	000.0 $\mu\text{L}$	none	5	
3	000.0 $\mu\text{L}$	none	5	
4	000.0 $\mu\text{L}$	none	5	
5	000.0 $\mu\text{L}$	none	5	

Similar to Variable Dispense, another option for editing all the aspirate steps at once is available by pressing the 'Edit All' row, when that feature is available. The pop-up window above will be displayed. This single window will allow you to edit all the aspects of every step at the same time. For more complex operations this option can be a valuable time saver. This feature can be enabled by checking the 'Allow Edit All' box on the Pipetting screen within Settings. (see [Section 4.8.2](#) below)

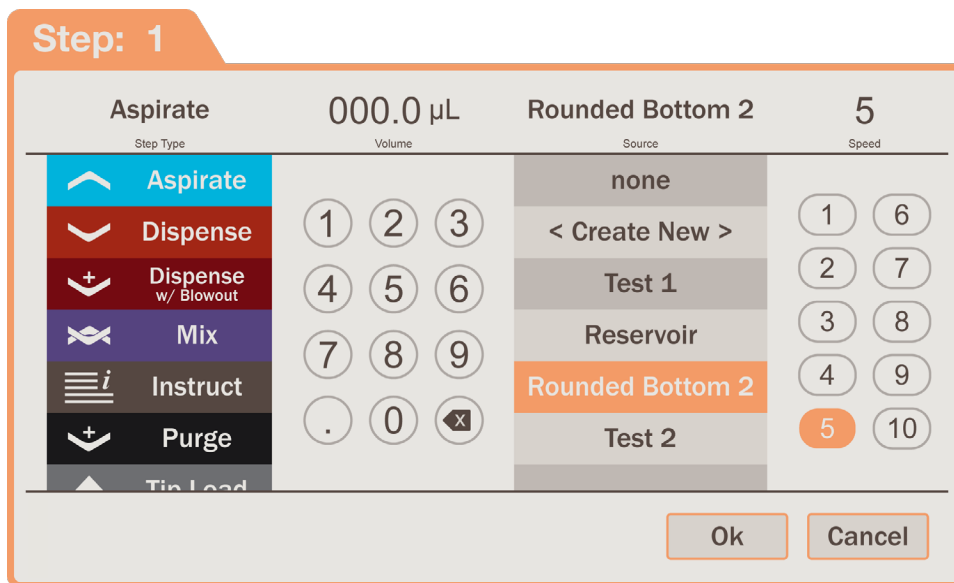
Running a Multi-Aspirate program is similar to the Variable Dispense program, except that it has multiple aspirates and only a single dispense. Otherwise all the operations are the same.



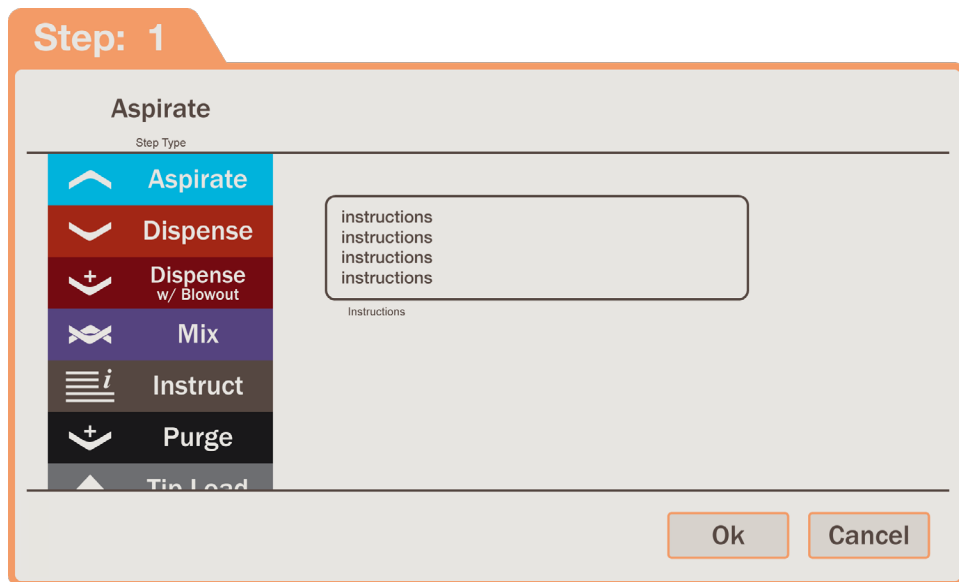
#### 4.3.6. Custom

Within the Custom function, you have the ability to create any type of program that you might need. This includes some unique step types that are only available within Custom programs; such as Dispense with Blowout, Purge, Instructions, Tip Load and Brightness. (see [Step Type](#) section above for more details)

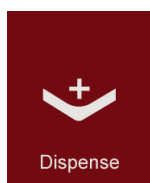
Similar to all the above standard functions, just pressing on a step will allow you to edit it. However, in Custom programs the pop-up window looks like this:



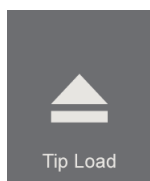
The main difference is that now you can select the type of step you would like to create. Once you have selected the step type, the rest of the pop-up window options will be displayed accordingly. In the case of the standard steps such as Aspirate, Dispense, and Mix they are identical as to what you have used before. For the other step types only available in Custom programs, each one is a bit different.



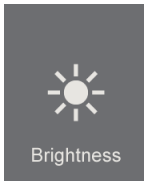
When selecting the Instructions step, you are asked to type out the instructions you wish to be displayed. Once an Instructions step has been created, the first set of characters in the instructions will be shown in the third column of the step. And in this case the volume and speed columns will be left blank.



When selecting a Dispense with Blowout step, the options available are essentially the same as any other standard dispense step. The only difference being that at the end of the dispense step the unit will be taken all the way to blowout, and essentially purge anything that is left in the tips.



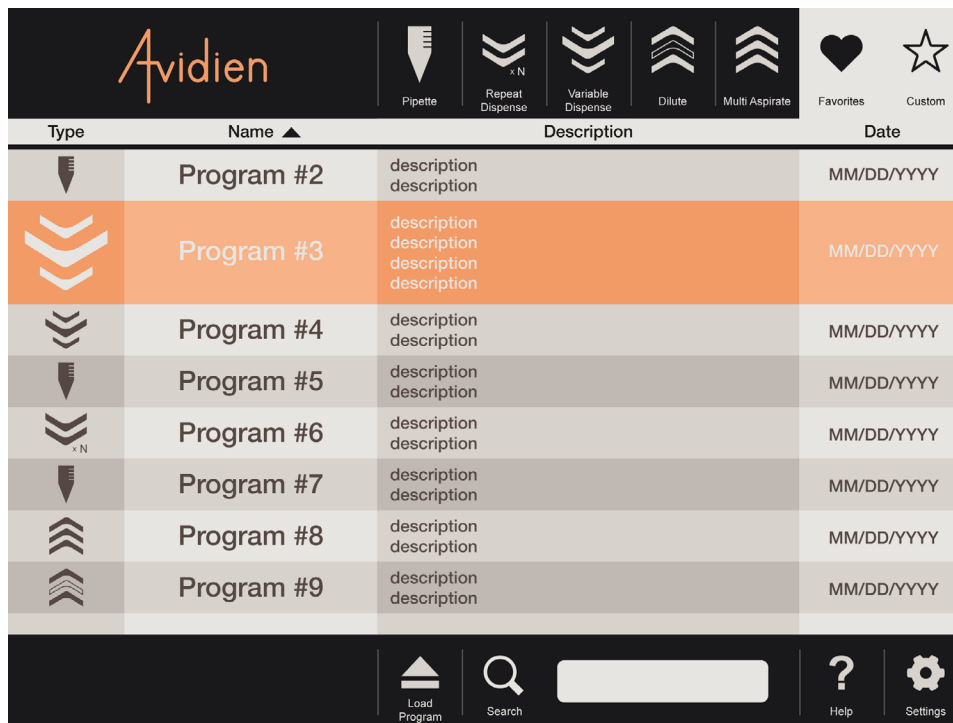
A Tip Load step simply inserts a normal tip eject then load cycle. This allows you to add a tip change anywhere within your program. This can be especially useful if it is a long program that requires different types of tips to be used at different times.



The Brightness step allows you to change the brightness of the LED lighting during a program. This could be used to signal the completion of the previous step, that would be noticeable from across the room. Or, it could be used to increase the illumination of the nest during a specific operation.

In most cases, you will be allowed to put together any series of steps that you like. It truly is a blank slate that will give you the ultimate flexibility to perform any operations that you might otherwise not be able to accomplish. The only restrictions are on anything that is beyond the capabilities of the instrument itself; such as aspirating more than the total volume allowed.

Running a Custom program is not that different than running any other program. In general the only differences are these unique steps that are specific to Custom programs, and the fact that the order of operations can be set to anything.



## 4.4 Favorites

### 4.4.1. List Overview

In the Favorites section, is a scrollable list of all the saved programs. Each program is defined by a program icon representing what type of program it is. In addition, each program has a name, description and the date/time it was last modified. You can also sort the list by clicking on the title for the name column. An arrow will appear showing which way it is sorted, and you can reverse the direction by simply pressing it again. Along the bottom of the screen there is also a search function.

Once you have identified the program you wish to use, you can select it by pressing on it. Once selected, that program row doubles in size and becomes highlighted. Then you simply have to press the Load Program tab at the bottom of the screen. That will immediately open the program and take you to that screen so you can begin editing and/or running it.

Additionally, you can delete a program by swiping the row to the left. This will reveal a red REMOVE button. Pressing this will permanently delete the program.

The image shows a rectangular pop-up window with an orange border. At the top, there is a rounded rectangle containing the text "Program #1". Below this, the word "Name" is written in a small font. Underneath is a larger rounded rectangle containing the word "description" repeated four times on separate lines. Below this text area, the word "Description" is written in a small font. At the bottom of the window, there is a horizontal line, and below that line are two buttons: "Save" and "Cancel".

#### 4.4.2. Saving Programs

Whenever you are editing or creating a program, you can save it by pressing the SAVE tab at the bottom of the screen. The pop-up window above will be displayed. You simply need to enter in a name for the program and then a brief description if desired. Then, press SAVE and it will be added to the list of programs in the Favorites section.

*NOTE: If you are saving changes to a program that has already been saved, then you will be warned that the existing one will be over-written. Similarly if you choose to save a program with the same name as an existing saved program, then you will also be warned that the existing one will be over-written.*

## 4.5 Tips



### 4.5.1. Load

The pop-up window above will be displayed if there are no tips loaded upon startup or after tip ejection.

To load, first place the rack of new tips on top of the nest. Then, bring the head down on top of the tips and press firmly. The instrument will automatically detect the presence of the tips and begin the loading process. Continue holding the head down firmly for a few seconds until loading is complete.

*NOTE: If you would like to skip tip loading and continue working without tips loaded, then simply press the CANCEL button in the pop-up window above. All programming and settings functions will be available, but the Load Tips pop-up window will be displayed again once the RUN button is pressed.*



### 4.5.2. Eject

To eject the current set of tips in the pipettor, press the EJECT button that is next to the image of the pipettor on the main screen. The pop-up window above will be displayed.

First, place an empty rack on top of the nest. Then bring the head down such that the tips are just starting to enter the rack. Then press the RUN button on the instrument to eject the tips into the rack. After ejection, you will be prompted to load a new set of tips.



### 4.5.3. *Types*

There are three different types of tips that can be used with the MicroPro300. This array of options provides added flexibility for a variety of uses. Below are the part numbers and specifications for each type:

#### **T-300-N-01**

300µL Cartridge, Non Filtered, Non Sterile

Precision Automation Pipette Tip Cartridge with RingLock Seal Technology

Low Retention Tip Resin Maximizes Sample Recovery and Improves CV%

Certified Rnase, Dnase, Nucleic Acids, Pyrogens/Endotoxins, PCR Inhibitor and Trace Metals Free

50 Cartridges per Case in Five Boxes x Ten Cartridges per Box, 4,800 Tips

Each Cartridge Individually Sealed in SBS Standard Footprint Tip Rack

#### **T-300-S-01**

300µL Cartridge, Non Filtered, Pre Sterile

Precision Automation Pipette Tip Cartridge with RingLock Seal Technology

Low Retention Tip Resin Maximizes Sample Recovery and Improves CV%

Certified Rnase, Dnase, Nucleic Acids, Pyrogens/Endotoxins, PCR Inhibitor and Trace Metals Free

50 Cartridges per Case in Five Boxes x Ten Cartridges per Box, 4,800 Tips

Each Cartridge Individually Sealed in SBS Standard Footprint Tip Rack

#### **T-300-F-01**

300µL Cartridge, Filtered, Pre Sterile

Precision Automation Pipette Tip Cartridge with RingLock Seal Technology

Barrier Tip Filter Reduces Cross Contamination Risk

Low Retention Tip Resin Maximizes Sample Recovery and Improves CV%

Certified Rnase, Dnase, Nucleic Acids, Pyrogens/Endotoxins, PCR Inhibitor and Trace Metals Free

50 Cartridges per Case in Five Boxes x Ten Cartridges per Box, 4,800 Tips

Each Cartridge Individually Sealed in SBS Standard Footprint Tip Rack

For more information regarding ordering tips, please see [Section 8](#) below.

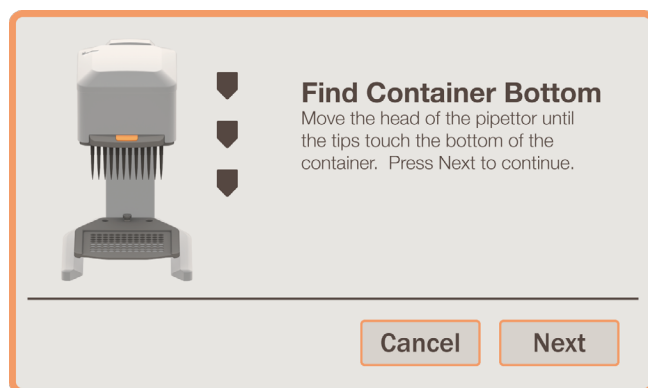


#### **CAUTION**

In order to maintain proper performance, use only the tips specified in this manual.

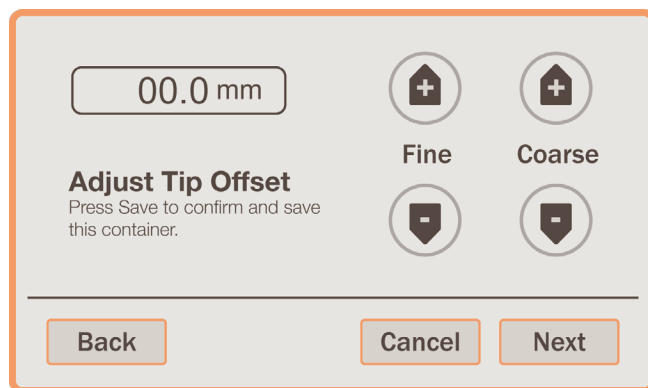
## 4.6 Pipetting Depth Recall

The Pipetting Depth Recall (PDR) feature, allows you to save the exact height offset relative to the bottom of a particular container. This will provide a quick and reliable way of making sure that the tips are appropriately spaced away from the bottom surface. And, it will greatly increase efficiency and speed throughout all your operations.



After pressing CREATE NEW from within the container selection list or [Settings](#), the pop-up window above will be displayed.

First, place the container either on top of the nest or below it in the case of a reservoir. Then, bring the head of the base unit down such that the tips are touching the bottom of the container. Hold the head in this position and press NEXT to continue.



After pressing NEXT, the above pop-up will be displayed. While continuing to hold the tips down, press the FINE and COARSE adjustment buttons until you have reached the desired distance between the tips and the bottom of the container. Then, press NEXT and the pop-up below will be displayed.

Enter Container Name  
Use the keyboard to enter a unique name for this container above.  
Press Next to continue.

Back Cancel Save

Here, you will enter a name for this container. Then simply press SAVE to save this container. Afterwards you will be taken back to wherever you were when you started this process.

## 4.7 Nest 96/384 Conversion

The nest platform can be easily converted to allow aspirating from or dispensing into 384 well micro plates. Each side of the nest is labeled according to the size of micro plate it is designed for. In order to change sides, simply loosen the nest mounting thumb nut. Then flip the nest platform over and re-secure with the thumb nut.

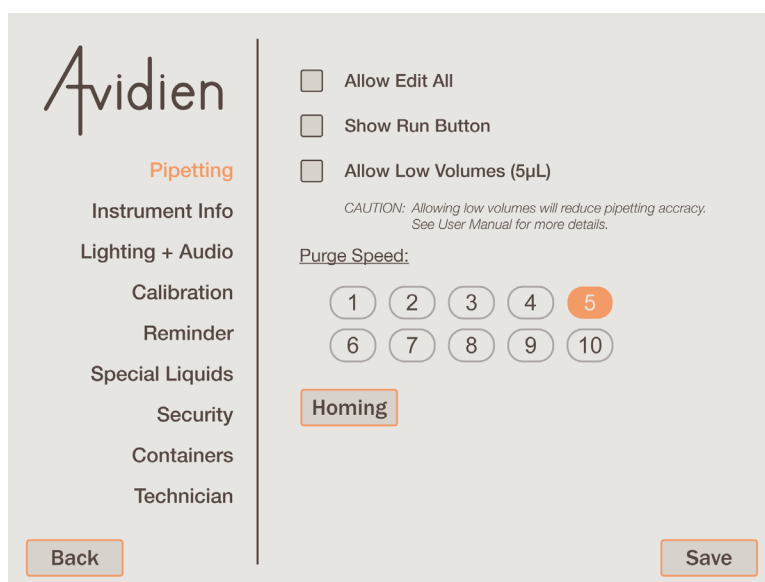
When using the nest for 384 well micro plates, place the micro plate onto the nest and push it into each corner. Each corner will align the tips with a specific quadrant of the 384 well micro plate. Then, you can aspirate or dispense normally.

## 4.8 Settings

### 4.8.1. Overview

In this screen you will be able to adjust a number of different options, calibrate the instrument, setup special liquids or containers, and control security access. The complete list of categories available is on the left side of the screen. Once selected the detailed options appear on the right side. The BACK button on the bottom left will return you back to the main screen. Whenever a setting has been modified the SAVE button will appear on the bottom right. Once you are satisfied with the changes, simply press the SAVE button to apply those changes.

*NOTE: If you attempt to leave a section after changes have been made without saving them, a warning pop-up will appear to inform you that the changes will be lost unless they are saved.*



### 4.8.2. Pipetting

The first category within settings, is Pipetting. In this section you will be able to enable the 'Edit All' function, show the RUN button, allow the use of low volumes (5 µL) and adjust the Purge Speed. Checking the box to allow 'Edit All' will enable this function within the Variable Dispense and Multi-Aspirate programs. For more information, see Sections [4.3.3](#) and [4.3.5](#) respectively.

Checking the box next to show RUN button will display the RUN button on the main screen. It will be located at the top of the instrument status image. This feature will allow you to run each step of the program remotely from the tablet. For example, if the instrument must be under a hood during operation, this could be quite useful.

To allow the use of low volumes down to 5  $\mu\text{L}$ , simply check the box next to it. Whenever this is not turned on, the default limit will be a volume of 15  $\mu\text{L}$ .

## NOTICE

The allowance of low volumes will reduce the pipetting accuracy and precision. See [Section 7.1](#) for more information.

For Purge Speed, this setting will define the speed at which all Purge operations are conducted. Whenever there is a Purge step in any program, it will be done at the speed set here. Additionally, there is also a Homing button. Pressing this will allow you to home the instrument.

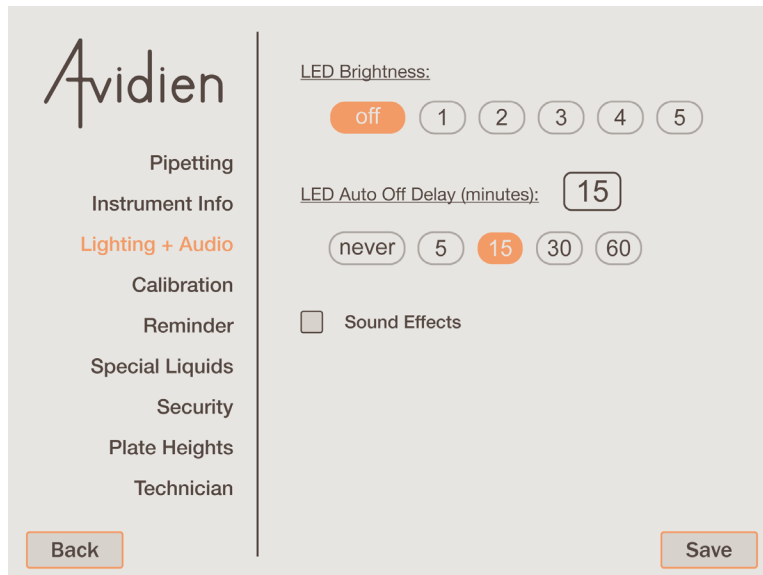
Instrument Name:	Instrument 1
Serial Number:	0123456789
Firmware Version:	1.1.2
Temperature:	72° F
<a href="#">Change Instrument</a>	
App Version:	0.1.163
Installed:	2016/11/09 18:03:21
Language:	English
Saved Programs:	27

### 4.8.3. Instrument Info

This section displays all the information for the instrument and the MicroPro App. Specifically, it will show the current Instrument Name, Serial Number, Firmware Version, Ambient Temperature, App Software Version, Date and Time this version of the App was installed, the Language, and the total number of saved programs there are.

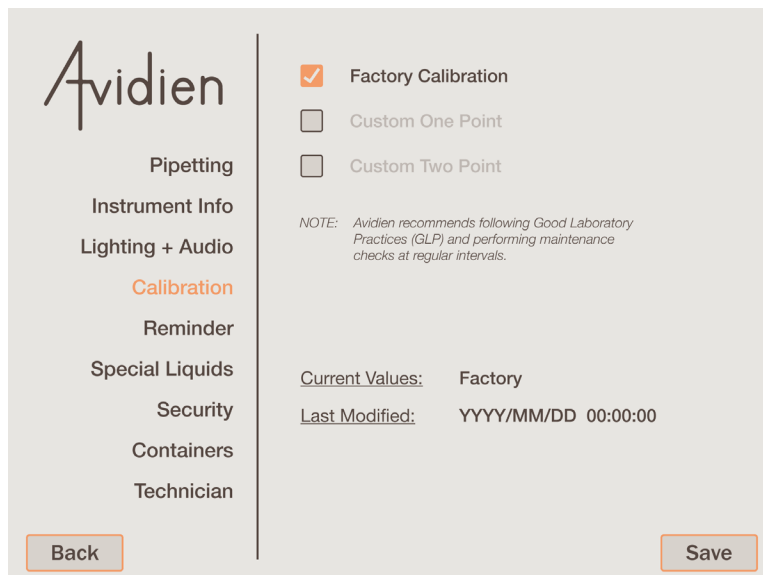
There are two things that you can do in this screen; change instruments or modify the instrument name. To edit the name of the current instrument, simply press the button that the name is in. This will allow you to edit and rename the instrument to anything you wish. Pressing on the 'Change Instrument' button will allow you to connect to any other available instrument, see [Section 4.1.1](#) for more details.

*NOTE: The Instrument Name is what will appear in the list of available instruments in the Connection screen. Also, this is the name that will be displayed on the main screen after you are connected.*



#### 4.8.4. Lighting + Audio

Here, you can turn on and off the deck lighting, as well as control the brightness. This is also where you can define the time period after which the deck lighting will turn off due to inactivity. Finally, the sound effects within the MicroPro App can be turned on. This will add sound to a few key activities within each program. This can be helpful if you have stepped away from the instrument while it was running, as it will notify you upon the completion of each step.



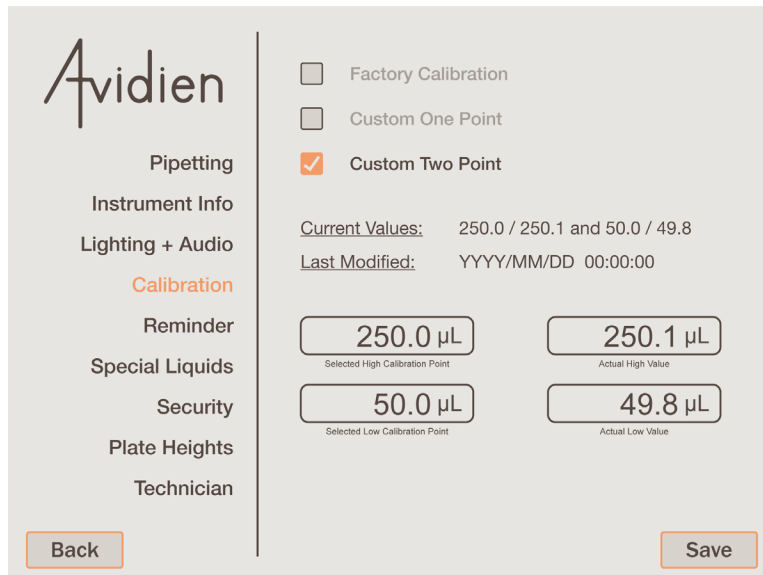
#### 4.8.5. Calibration

This section allows you to change the type of calibration your instrument is operating under. By default, the instrument will operate under Factory Calibration. This is the normal operating state that has been calibrated by an independent laboratory to ensure the accuracy and repeatability of the instrument across the normal operating volume range. These settings cannot be altered, however Avidien does recommend that users follow Good Laboratory Practices (GLP) and perform maintenance checks at regular intervals to ensure proper operation.

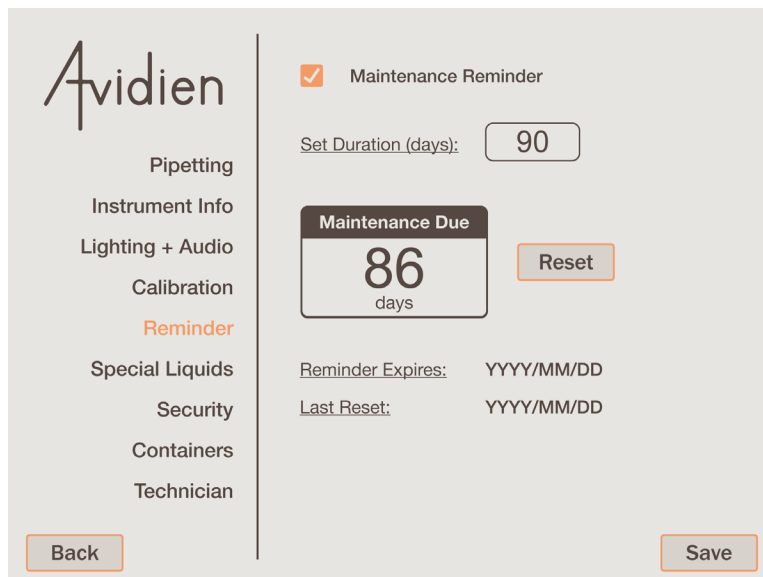
If desired, other types of calibration are available. You can select from either a Custom One Point or Two Point calibration. This will adjust the settings of the instrument on top of the factory calibration.

The screenshot shows the Avidien Calibration settings interface. On the left is a navigation menu with the Avidien logo at the top, followed by: Pipetting, Instrument Info, Lighting + Audio, Calibration (highlighted in orange), Reminder, Special Liquids, Security, Plate Heights, and Technician. At the bottom of the menu is a 'Back' button. The main content area on the right has three radio button options: 'Factory Calibration' (unchecked), 'Custom One Point' (checked), and 'Custom Two Point' (unchecked). Below these are two lines of text: 'Current Values: 150.0 / 150.1' and 'Last Modified: YYYY/MM/DD 00:00:00'. There are two input fields: the first contains '150.0 µL' with the label 'Selected Calibration Point' below it, and the second contains '150.1 µL' with the label 'Actual Value' below it. At the bottom right of the main area is a 'Save' button.

After selecting a Custom One Point calibration, the above will be displayed. Here you can enter the desired calibration value along with the subsequent actual value. This will adjust the instrument's calibration curves accordingly.



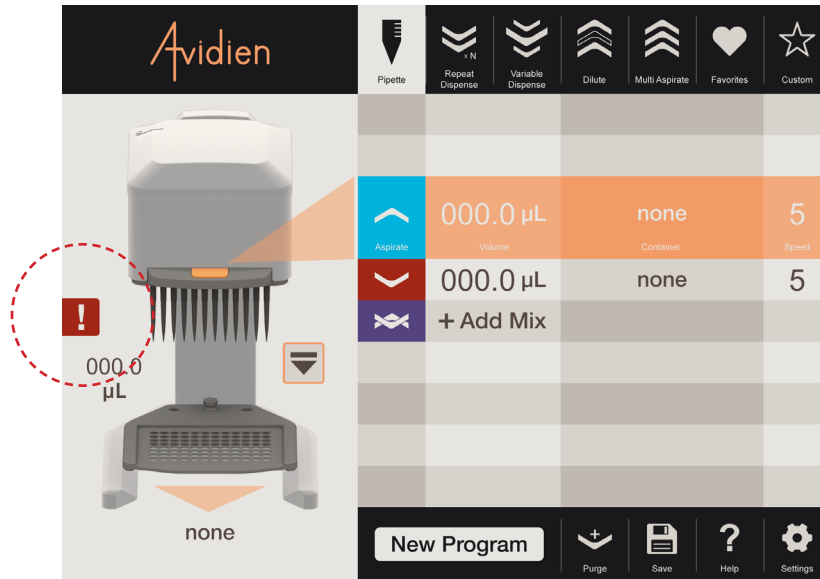
After selecting a Custom Two Point calibration, the above will be displayed. Here you can enter the desired high and low calibration values along with the subsequent actual values. This will adjust the instrument's calibration curves accordingly.



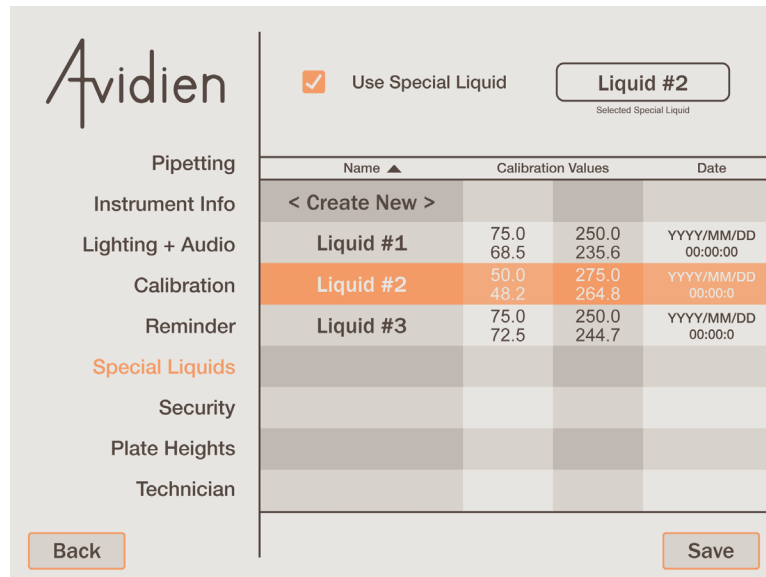
#### 4.8.6. Reminder

This section is where you can turn on/off the Maintenance Reminder, and set its duration in days. You can also reset the reminder, see when it expires, and see when it was last reset. This is a helpful tool that can be used to ensure the instrument is checked at regular intervals.





When the reminder elapses, a red exclamation point symbol will be shown next to the image of the pipettor on the main screen. (see image above) Pressing on this symbol will tell you that it is time for maintenance.



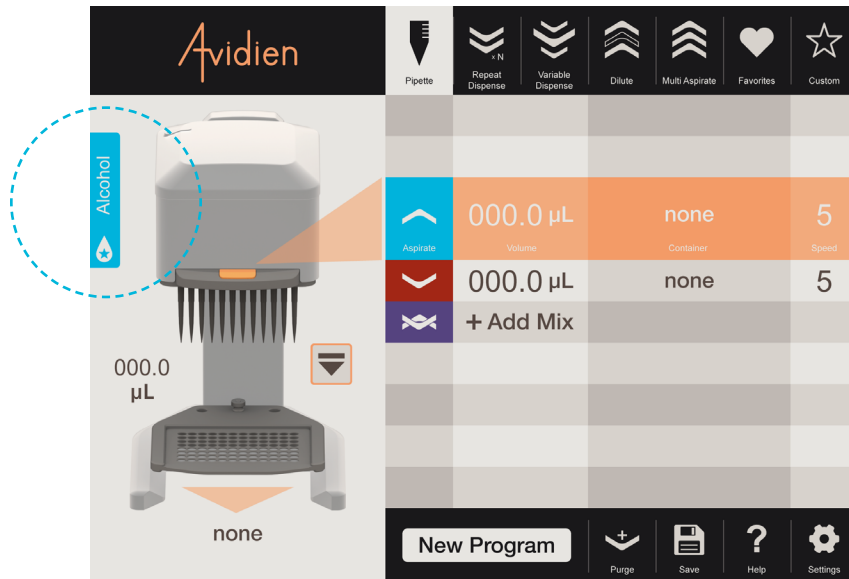
#### 4.8.7. Special Liquids

This section is where you will create and maintain the calibration settings for all the special liquids that you use. The check box at the top of the screen turns the Special Liquid calibration settings on/off. The list below contains all the special liquids, their settings, and creation date. When Special Liquids is active, the one selected in the list is what will be used. The name of the selected liquid will appear in the box at the top.

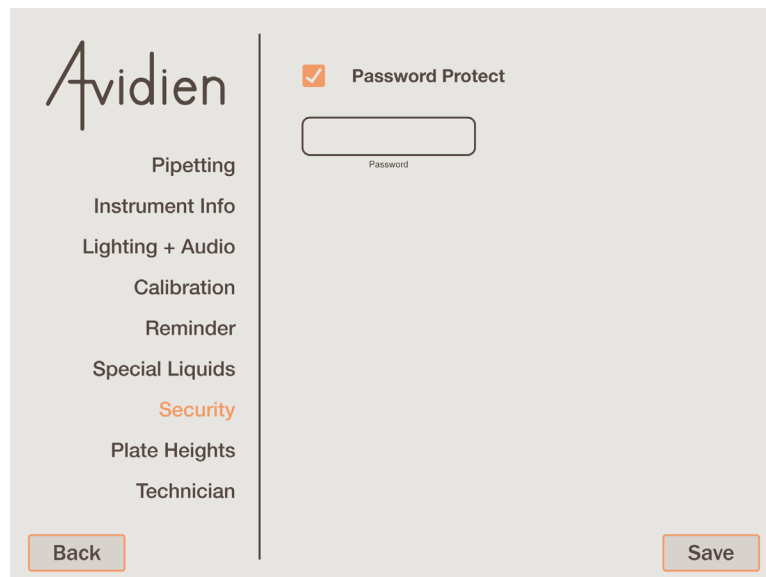
To create a new special liquid, simply press on the top row labeled <Create New>. Then, the pop-up window above will be displayed. Here you can enter in the name of the special liquid and the desired calibration values along with the subsequent actual values.

Name ▲	Calibration Values		Date
< Create New >			
Liquid #1	75.0 68.5	250.0 235.6	YYYY/MM/DD 00:00:00
Liquid #2	75.0 68.5	250.0 235.6	YYYY/MM/DD 00:00:00
Liquid #3	75.0 68.5	250.0 235.6	YYYY/MM/DD 00:00:00

If you would like to Select, Modify or Remove a special liquid that has already been created, simply swipe that row to the left. The three corresponding buttons will be revealed. (see image above) Once you have special liquids turned on and the desired one selected, simply press the SAVE button at the bottom of the screen as usual.



When you return to the main screen, there will now be a blue icon next to the instrument image with the name of the selected special liquid. (see image above)

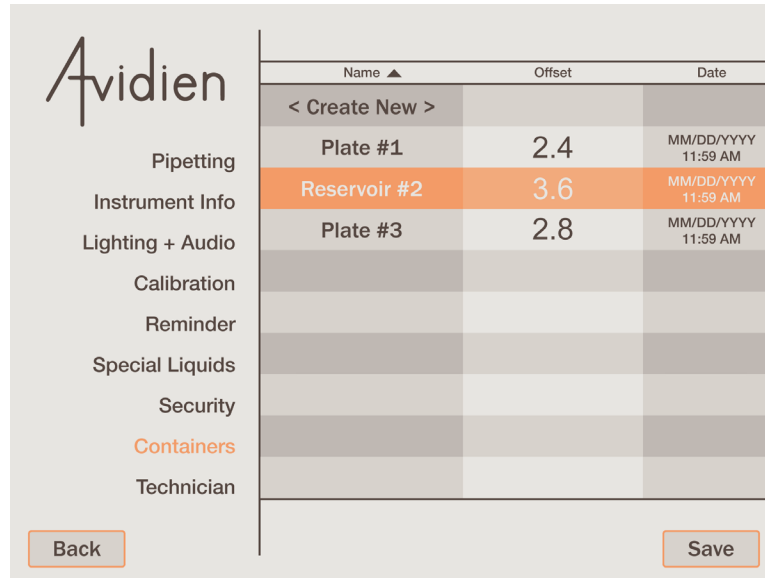


#### 4.8.8. Security

In this section, you will be able to set a password for the MicroPro App. The check box allows you to turn this feature on/off. When password protection is turned on, the user will only be able to run pre-existing programs. They will not be able to edit existing programs or create any new ones.

When activating this feature, ensure the box is checked, enter the desired password into the available field, and press SAVE. Once you exit this section, the password you entered will disappear and from now on password protection will be enabled. In order to turn off this feature, you will be required to enter the correct password before un-checking the box.

It is recommended that you write down your password in a safe place. However, when this security feature is enabled, a Password Recovery button will also be displayed. If you ever forget or lose track of your password, press this button. You will be provided with a special code. Write this code down and contact Avidien Customer Service at (978) 634-1403 or [support@avidien.com](mailto:support@avidien.com). They will be able to use this code to recover your password.



#### 4.8.9. Containers

This section contains a complete list of all the containers that have been created and saved. It is organized by name and also displays the offset distance and the date it was created or last modified.

From this screen you can create new containers by simply pressing on the top row called < Create New >. And, you can also modify or remove existing containers. Simply swipe the desired row to the left and reveal the corresponding buttons. (see image below)



#### 4.8.10. Technician

This final area is reserved for service personnel only, and is password protected. If you need assistance with your instrument, please contact Avidien Customer Service at [support@avidien.com](mailto:support@avidien.com) or call (978) 634-1403.

# 5. Troubleshooting

## 5.1 General Errors

Issue	Possible Causes	Solutions
Tablet is unresponsive.	Depleted battery.	Charge the battery, using the cable and power supply provided. Note that a fully depleted battery will require a few minutes to reach a minimum charge level.
	Tablet turned off.	Ensure the tablet is ON. Refer to the user manual provided with the tablet.
Instrument is unresponsive.	Power cord unplugged.	Ensure that the power cord is plugged into a working power outlet.
Auto-loading of tips does not occur, or tips do not load properly.	Incorrect tip cartridges being used.	Check the tip cartridge, and ensure they are authorised for use with your instrument. See <a href="#">Section 4.5.3</a>
	Tip rack not properly seated in nest.	Ensure tip rack is seated and aligned properly in the nest.
	Adequate pressure not applied during loading.	Apply a sufficient amount of downward pressure on the head of the instrument during tip loading.
Liquid dripping from the tips.	Tips not loaded properly.	See above.
	Sealing surfaces damaged.	Contact your authorized service representative. See <a href="#">Section 6.3</a> below.
Tips do not aspirate evenly.	Tips not loaded properly.	See above.
	Tips not fully submerged in liquid throughout aspiration.	Ensure tips are fully submerged, and change <a href="#">PDR</a> setting if needed.
	Internal seal failure.	Perform leak test by aspirating 300 µL. If any drips occur within 2 minutes, contact your authorized service representative. See <a href="#">Section 6.4</a> below.
Dispense volume is inaccurate.	Damaged tips.	Try a new set of tips and see if the problem persists.
	Incorrect calibration being used.	Ensure custom calibration has been set properly, and that special liquids calibration has not been turned on accidentally.
	Aspirate or dispense speed set too high.	Reduce speed as needed.

## 5.2 Wireless Connection Errors

<b>Issue</b>	<b>Possible Causes</b>	<b>Solutions</b>
Lost connection between tablet and instrument.	Instrument is not powered on.  Bluetooth connection on tablet has been turned off.  Distance between the tablet and the instrument is too great.	Ensure the instrument is plugged into a working power outlet.  Open Settings on the tablet, and activate Bluetooth. (refer to the user manual provided with the tablet) Close and restart the App.  Bring the tablet closer to the instrument.
Tablet connected to the wrong instrument.	Tablet automatically connected to the last instrument used.	Go to Settings -> Instrument Info Press the Change Instrument button and select the desired one from the list.
Desired instrument does not appear in the list of available units.	Instrument is not powered on.  Distance between the tablet and the instrument is too great.	Ensure the instrument is plugged into a working power outlet.  Bring the tablet closer to the instrument.

## 6. Care and Maintenance

The MicroPro 300 pipetting system is designed for easy care and use in the recommended laboratory environment. Avoid using the instrument in a dusty or damp environment, and keep the instrument as clean as possible.

### 6.1 Cleaning

It is recommended that the instrument be cleaned at least once a month. All outer surfaces of the instrument can be cleaned using a clean cloth and a mild detergent. For easy cleaning of the base, simply remove the nest. Both sides of the nest can then be cleaned quite easily. And, the nest is autoclavable if necessary.



#### **WARNING**

The instrument must be disconnected from electrical power prior to cleaning, in order to avoid the risk of electric shock and damage to the instrument.



#### **CAUTION**

Avoid spilling liquid onto the pipetting head or into the tower of the instrument. This could lead to instrument damage and/or improper functionality.

Do not use any aggressive solvents or chemicals on the instrument. This could result in damage to the instrument and/or improper functionality.

### 6.2 Decontamination

Parts that may have been contaminated by potentially hazardous substances, should be cleaned with a damp cloth and 10% bleach solution or any other appropriate disinfectant. Decontamination is the sole responsibility of the owner and/or operator of the instrument. For more information, or if you have any questions regarding decontamination contact Avidien Customer Service at [support@avidien.com](mailto:support@avidien.com) or call (978) 634-1403.

Prior to sending a unit back for service, or having the unit serviced in the field; it must be decontaminated if it has come into contact with radioactive or hazardous substances. And, the Decontamination Form (see [Section 9.1](#)) must be completed, signed and submitted as directed.

### 6.3 Calibration

The MicroPro 300 comes calibrated direct from the factory. The factory calibration should be good for the life of the instrument. However, if at any time you see any issues related to the calibration and accuracy of the instrument, please contact Avidien Customer Service at [support@avidien.com](mailto:support@avidien.com) or call (978) 634-1403.

For more information on user calibration and special liquids, see [Sections 4.8.5](#) and [4.8.7](#) above.

## 6.4 Service

For any issues with your MicroPro 300, please contact Avidien Customer Service at [support@avidien.com](mailto:support@avidien.com) or call (978) 634-1403. Service must be performed by an authorized technician only.



### WARNING

Do not open the instrument enclosure. There are no user-serviceable parts inside.

# 7. Technical Specifications

## 7.1 Performance Specifications

<b>Channel Accuracy</b>	300 $\mu\text{L}$ : $\pm 1.0\%$ (3.0 $\mu\text{L}$ ) 30 $\mu\text{L}$ : $\pm 1.5\%$ (0.45 $\mu\text{L}$ ) 15 $\mu\text{L}$ : $\pm 2.0\%$ (0.3 $\mu\text{L}$ ) 5 $\mu\text{L}$ : $\pm 5.0\%$ (0.25 $\mu\text{L}$ )
<b>Channel Precision</b>	300 $\mu\text{L}$ : $\leq 1.0\%$ (3.0 $\mu\text{L}$ ) 30 $\mu\text{L}$ : $\leq 1.0\%$ (0.3 $\mu\text{L}$ ) 15 $\mu\text{L}$ : $\leq 2.0\%$ (0.3 $\mu\text{L}$ ) 5 $\mu\text{L}$ : $\leq 5.0\%$ (0.25 $\mu\text{L}$ )

## 7.2 Weight and Dimensions

<b>Length</b>	216 mm (8.5 inches)
<b>Width</b>	190 mm (7.5 inches)
<b>Height</b>	320 mm (12.6 inches)
<b>Weight</b>	5 kg (11 lbs)

## 7.3 Power Supply

<b>Input (AC)</b>	100-240V 1.6A 50-60Hz
<b>Output (DC)</b>	24V 2.5A



## 7.4 Test Conditions

Details regarding the standard test conditions are available upon request. Please contact Avidien Customer Service at [support@avidien.com](mailto:support@avidien.com) or call (978) 634-1403.

## 7.5 Environmental

<b>Environment</b>	Only for use indoors.
<b>Usage Temperature</b>	18°C - 35°C
<b>Relative Humidity</b>	55% - 75% (non-condensing)

## 8. Ordering

For ordering tips, accessories or additional instruments, please contact your local distributor, go to [www.avidien.com](http://www.avidien.com), or call (978) 634-1401. The types and part numbers for the available tips are in [Section 4.5.3](#) above.

# 9. Decontamination Form

Please complete this form and email/fax it to Avidien Technologies and the Authorized Service Center, and include a hard copy with the instrument.

Date: \_\_\_\_\_ RMA #: \_\_\_\_\_

Model: **MP300** Serial Number: \_\_\_\_\_

Company Name: \_\_\_\_\_

Decontamination performed by: \_\_\_\_\_

Do you certify that the instrument is still in its original packaging  
AND has not come into contact with any substances or chemicals? (circle one) **Y / N**  
(if YES, then skip to comments section below)

List all chemicals or substances used with this instrument:

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Decontamination procedure followed:  
(refer to section 6.4)

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Comments:

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I hereby state that the above information is correct, and that the instrument I am returning has not been tampered with and/or contaminated.

Name (print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## 10. Notes

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