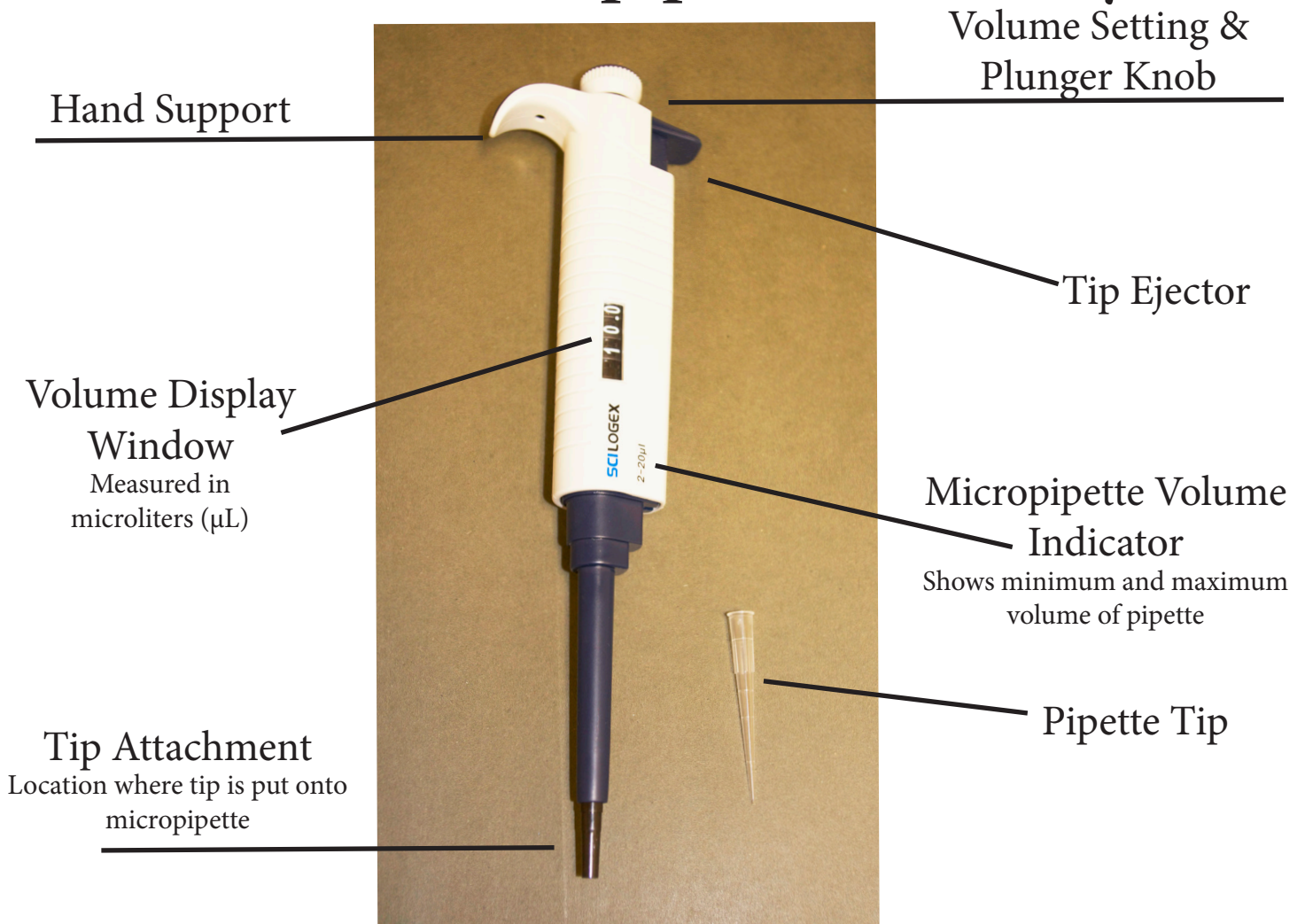
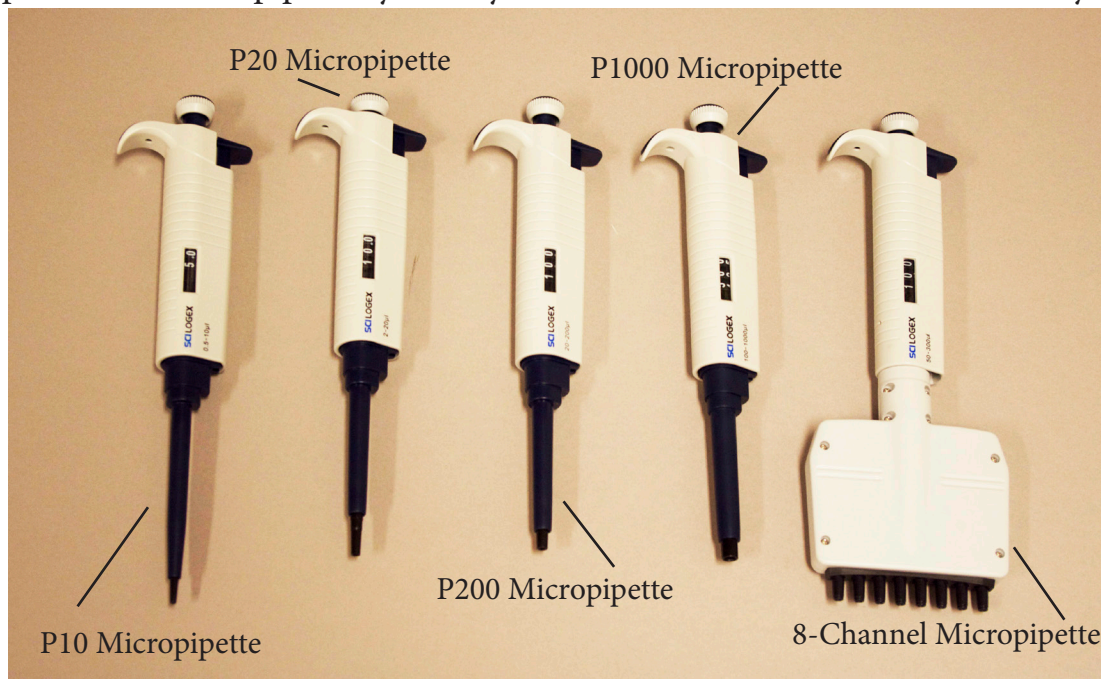


ASSET Micropipette Anatomy



Micropipettes are usually named for their highest volume capacity.
Below is a picture of all the pipettes you may use in the ASSET modules, notice they look a lot alike!



ASSET: How to Use a Micropipette



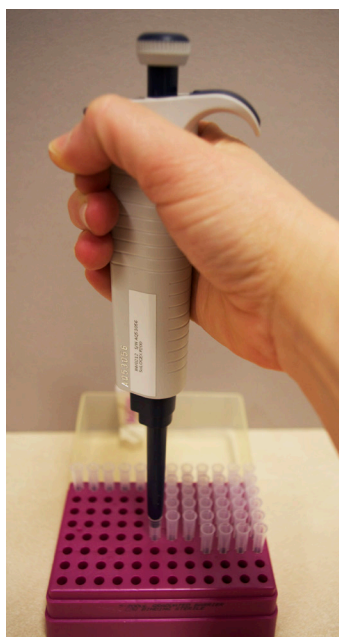
1. Use a micropipette when you are working with small quantities of liquids. Before using a pipette you should always know the volume you need and what pipette is the appropriate size for your use. The volume minimum and maximum will be listed on the side of the pipette. In the image to the left, the minimum amount is 2µL and the maximum amount 20µL.

2. Be aware that there may be decimal points in your display window. For example, in the middle picture to the left, the volume is 10.0µL. There is a faint dot between the two zeros representing the decimal point. The bottom picture is 100µL as depicted on a P200 pipette. Go slowly and always take the time to make sure you know what size pipette you are using and that you are reading the volume display correctly.

3. Once you have the appropriate pipette, gently turn the Volume Setting Knob to the desired volume. **DO THIS BEFORE** putting a tip on the micropipette. **DO NOT** try to set the volume outside the limits indicated on the pipette.



4. Holding a micropipette can be tricky depending on the size of the user's hands. Generally, the pipette is held as depicted in the images to the right where the fingers wrap around the Hand Support so your thumb is available to use the Plunger and Tip Ejector mechanisms.



5. Putting a tip on your micropipette involves choosing the right size tip. The picture below shows the different sizes of ASSET pipettes and the tips that go with each. Usually, the larger the volume, the larger the tip. Logically, the P10 uses the P10 tips, the P1000 uses the P1000 tips. However, the P200 tips will fit the P20, P200 and 8-channel pipette.



6. Use a steady hand to hold your pipette, open the tip box and firmly press the pipette into the tip. **DO NOT** tighten the tip with your fingers as this increases the likelihood of contamination. If you press down firmly while the tip is in the box, you will properly tighten the tip. Pull your pipette straight out of the box and put the lid back on the tips to prevent contamination of your tip box. **ALWAYS PUT A TIP ON YOUR PIPETTE BEFORE USE!**



7. When using the Plunger on top of the pipette, there are two stopping points, STOP ONE and STOP TWO. STOP ONE is used for drawing-up liquid into your pipette tip and then releasing it into your chosen receptacle. The second stop is for providing a little puff of air to fully empty your pipette tip. Before putting your pipette into a sample, practice telling the difference between STOP ONE and STOP TWO. STOP TWO should be harder to get to and require slightly more force. The smaller the volume you are measuring, the harder it is to tell the difference between these two stops. Make sure you can feel the difference between the two stopping points before moving on.

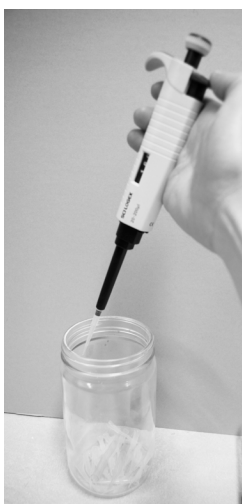
8. To pick up a liquid, first make sure you have the sample you are withdrawing from next to the container you are transferring the liquid into. In the photo to the right, liquid is being picked up from a microfuge tube and transferred into a petri dish. While holding the pipette and microfuge tube, press down on the Plunger to STOP ONE and put your tip into the liquid. The tip should not go to the bottom of your sample or be too close to the top of your sample. With the tip submerged, **SLOWLY** release (especially important to go slow with larger volumes of liquids) the pressure on your Plunger and the exact volume will be drawn up inside your tip. Always look at the tip after drawing up to make sure the liquid is actually there and after expelling to make sure it is out. Lift your tip out of the container and prepare to transfer the liquid into the petri dish. If there is liquid stuck to the outside of your tip, gently touch the tip inside of the microfuge tube just above the level of the liquid to remove it.



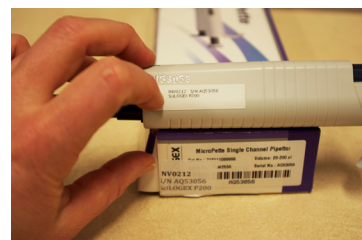
9. If you have air bubbles in your pipette tip, release the liquid back into the original container by pressing down to STOP ONE and then STOP TWO. Remove the tip from the liquid before releasing the plunger. Repeat step #8 again. It is **VERY IMPORTANT** that you are sure you have extracted the correct volume. Too much or too little of a substance could be detrimental to your work.



10. Once you have picked up the correct volume, transfer it into the petri dish. Make sure to press all the way down to STOP TWO to fully release the liquid. Remove the tip from the liquid **BEFORE** you release your pressure on the Plunger, otherwise you will draw back up the liquid you just expelled.



11. If your lab protocol requires you to change pipette tips, find your waste container and press firmly down on the Tip Ejector. If the tip is hard to remove, next time you put on a tip don't press quite so hard. Put on a new tip and follow the procedure again. Avoiding contamination is incredibly important and in most cases if you are extracting from a new sample, it will be important to change your tip.



12. Once you are completely done using your pipette, please return it to the box it came in. Don't leave micropipettes lying around - they are easily broken! If you have been using multiple pipettes, make sure the number on the pipette matches the number on the box. Pipettes take some practice, but with time it will feel like second nature!



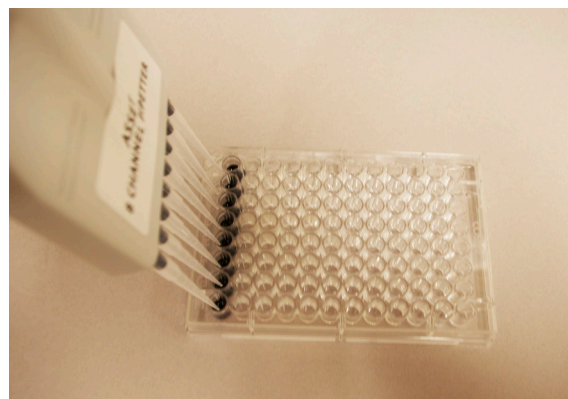
How to Use an 8-Channel Micropipette

1. Using an 8-channel micropipette is essentially the same as using an individual pipette. The advantage of an 8-channel is that you can extract the **SAME QUANTITY** of liquid from adjacent wells in a 96-well plate at the same time. The anatomy of the 8-channel is the same as an individual pipette, except that you have eight tips instead of one.



2. To load an 8-channel pipette, use P200 tips and make sure that you have eight tips available in one row. Press the 8-channel pipette down firmly in your tip box to ensure that you have secured all the tips. Again, **DO NOT** tighten the tips using your fingers. Making sure ALL the tips are secured can be the trickiest part of using an 8-channel pipette, so take your time. Press down two or three times in the tip box, to ensure that all your tips are on. Lift the pipette straight out of the box to avoid knocking tips off. If a tip comes off, replace it by returning the unused pipette tips to the tip box and unloading your tips back where you got them from. Try a new row of tips, again pressing firmly to secure all eight at once.

3. Loading the 8-channel is just like the individual pipette. Press down to STOP ONE, submerge the tips in the 8 wells of the 96-well plate you are using and slowly release the pressure on your Plunger. Liquid should come up equally into the tips. If you are concerned that you did not withdraw the same amount in each well, expel the liquid back into the original wells and follow the steps again.



4. Once you have successfully filled all 8 pipette tips, transfer the liquid to the appropriate row in your 96-well plate. Press down to STOP ONE to release the liquid and then to STOP TWO to ensure that all the liquid has been released from the tips. Pull the tips out of the wells **BEFORE** releasing the plunger, otherwise you will draw back up the liquid you just expelled.

5. If the protocol requires you to change tips for the next step, release all the tips into a waste container and follow the same procedure for reloading your pipette.

6. Once you are completely done using your pipette, return it to the box it came in. Do not leave 8-channel pipettes lying on the lab bench, they are easily broken. Make sure the number on the pipette matches the number on the box. 8-channel pipettes are fun to use once you get the hang of attaching 8 tips at a time!