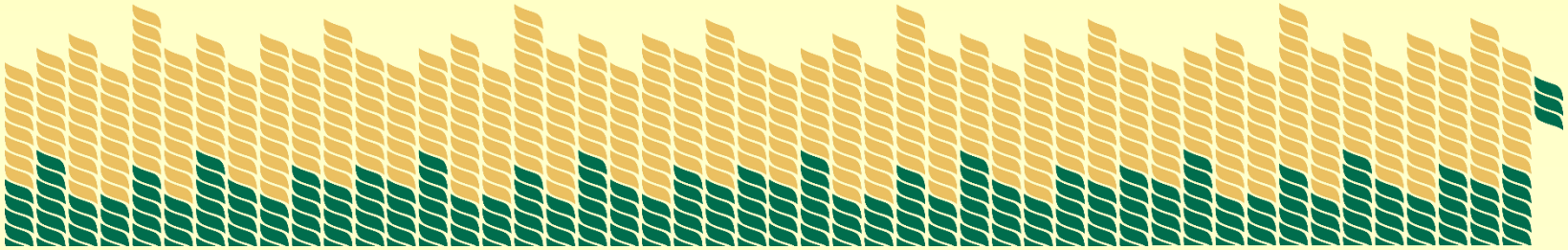
UNIWERSYTET PRZYRODNICZY w Lublinie

WYDZIAŁ MEDYCYNY WETERYNARYJNEJ

Regulations
&
Safty rules in the biochemical lab

Regulations

- **Exercise classes are mandatory**
- **Excused absence from exercise requires completement, or passing in mode agreed with the teacher (only in exceptional cases and only once semester)**
- **Classes must be attended on time. Students coming more than 15 minutes late will not be allowed to attend the exercise, and such cases will be treated as absence.**



- On every exercise, before proceeding to the practical part, there will be theoretical test held, on the subject regarding the following exercise. The topics of exercises and the summary of basis of theoretical exercises will be available at least one week prior to the date of exercise on the Department of Biochemistry website. (http://www.biochwet.up.lublin.pl)

- Each exercise ends with passing the credit, failed credits must be completed.

- Two classes per semester are reserved for theoretical tests covering material presented in lectures and exercises, according to the issues included on Department of Biochemistry website.

- Degrees and points gained during exercises and semestral tests, as well as a pass in practical exercise are the basis for admission to the final exam.

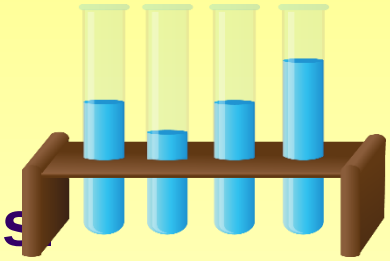
- To participate in the exercises, students are required to participate in health and safety briefing confirmed by their signature. Students are obliged to keep within safety rules and guidelines in the Laboratory of the Department of Biochemistry

- Charges for the culpable destruction or damage of laboratory equipment (according to their actual value) will be incurred.

- At the end of the exercise students are required to leave their working positions in an orderly condition.

Safety rules in the biochemical laboratory

- In the laboratory, students are only allowed under the supervision of exercise lecturer.
- In the laboratory areas you are not allowed to consume any meals.
- It is also forbidden to try any chemical substances.

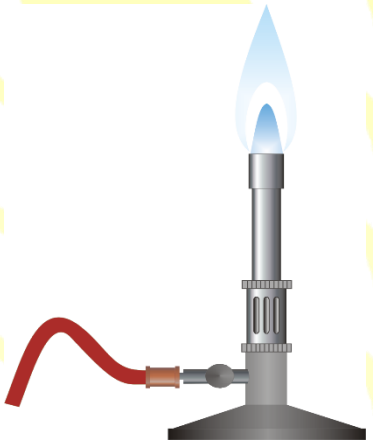


- Students performing the exercises should be dressed in protective aprons.
- All actions that can cause the release of the toxic (harmful), vapors and gases, must be carried out in a fume cupboard.

- Do not leave on unattended burners and/or heating devices, pay attention whether in the laboratory leaks gas. In this last case, close off the gas, put out all burning torches, run the ventilation and open windows.

- Do not suck in any solutions and reagents by mouth. This should be done with special tips for pipettes or rubber pears.

- Solutions of concentrated acids or concentrated alkalis, charge to your test tubes or other vessels in place of location of these concentrated solutions. It is forbidden to transfer vessels with concentrated acids and bases to other places than for them provided.



- The tubes whose content must be heated over the flame fill with only a few ml and heat them while holding a test tube in wooden claws. During the heating constantly shake the tubes and direct their top to a place where nobody is present. If it is possible, heat liquids in test tubes lead (do) in protective glasses.

- Be cautious at all times and remember that the lack of accuracy, inattention, insufficient familiarity with the equipment and reagents - can cause an accident.

First aid in emergencies

- In the laboratory may occur incidents such as: mutilation, burns by concentrated acids or bases, thermal burns, poisoning by harmful substances and many others. First aid in these cases is based on simple procedures and giving it is the responsibility of person conducting the exercise and his companions. For this purpose, you need a first aid kit, placed in a prominent position and fitted with a set of medicines, dressings and instructions for their use.

- With the laceration (injuries) aid entails cleaning the wound, disinfecting it, and stopping the flow of blood. When the wound is contaminated it must be washed first. Decontaminate of the wounds can be carried out using hydrogen peroxide, iodine or other means mentioned in the instructions supplied with the first aid kit. After this apply dressing to a wound and a sterile gauze and bandage. With bruises apply a cold compress.

- **With getting into eye a solution of a chemical reagent immediately and thoroughly wash the eye with water stream from the eye scrubber which is located at each island table. If the pollutant was concentrated acid or concentrated base, student must be send to an ophthalmologist after receiving first aid.**
- **During skin burns by concentrated acids or bases - the procedure is as in case of getting a chemical reagent into eye**
- **With thermal burns of the skin affected area should be immediately cooled with cold water. In the case of lighter burns, sprinkle with table salt or use a compress of high-proof alcohol. In the case of severe burns, apply a poultice of 5% solution of $KMnO_4$ and direct victim immediately to the doctor.**

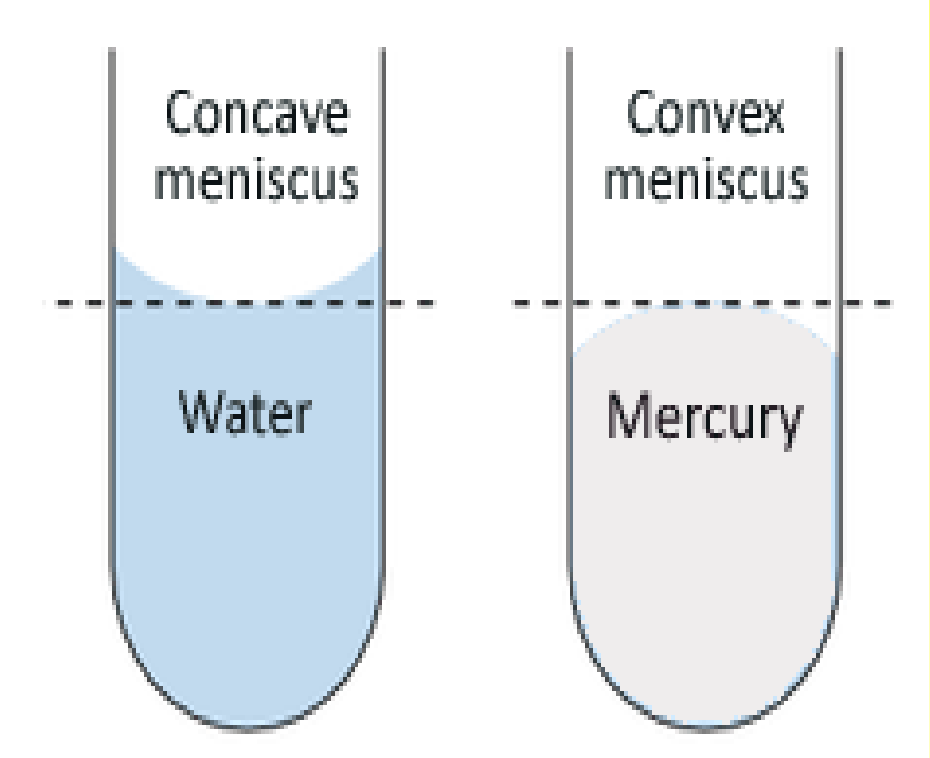
- **We do not recommend to use on skin burns - as before - a solution of calcium hydroxide, fats and ointments, because these measures further impede outpatient treatment.**

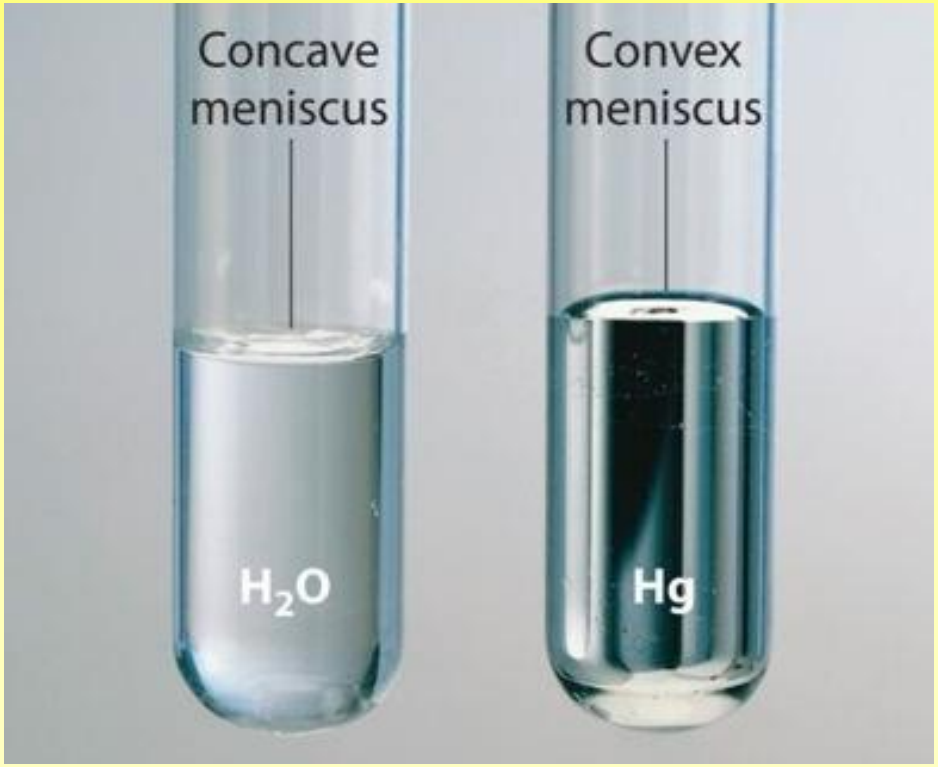
- **In cases of poisoning with heavy metal salts immediately give the patient milk or raw egg.**

- **Electrical installation inside the laboratory is now modernized and safe. If there had been an electric shock of the operator of device powered by electricity then the closest person of the victim should immediately disconnect the power cord or turn off the fuses. If electrocuted is unconscious artificial resuscitation must be performed and an ambulance called emediatedly. Skin burns caused by an electrical short-circuit electricity should be treated same as thermal burns.**

Pipetting

- Meniscus





What determines the type of meniscus?

The type of meniscus is determinate by adhesion and cohesion

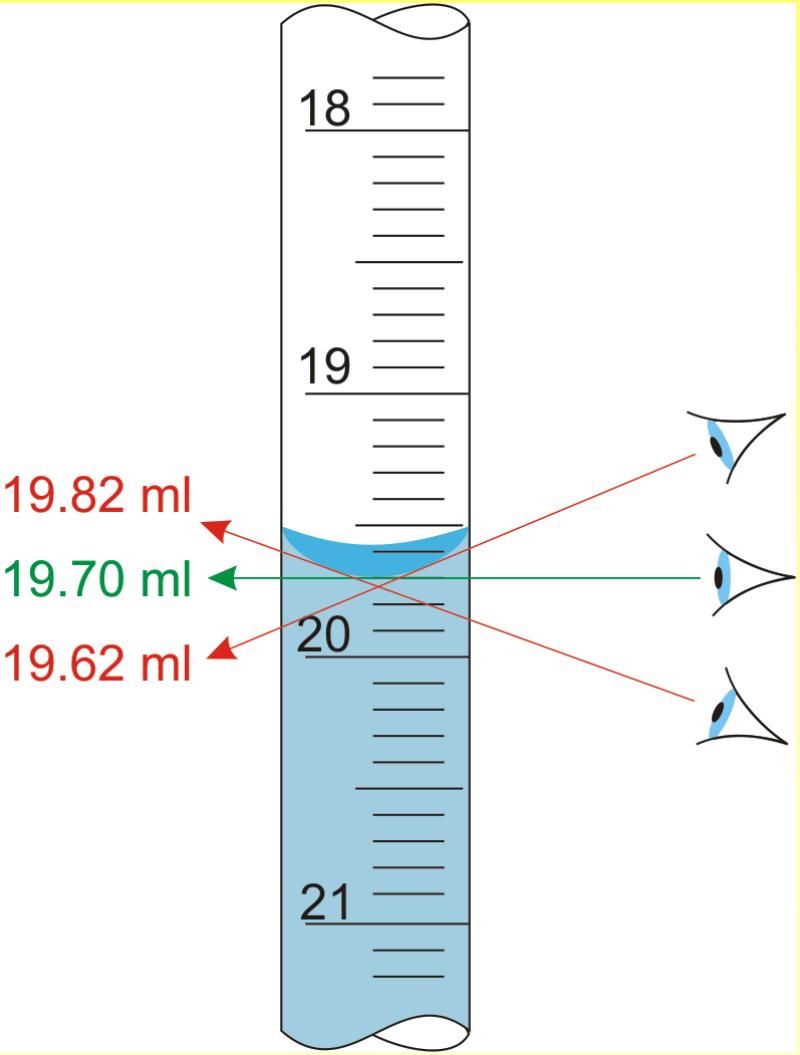
Wather's adhesion to glass is stronger than its cohesion to itsself

-Creating the concave meniscus

Mercury's cohesion to itself is stronger thanits adhesion to glass

- Creating te convex meniscus

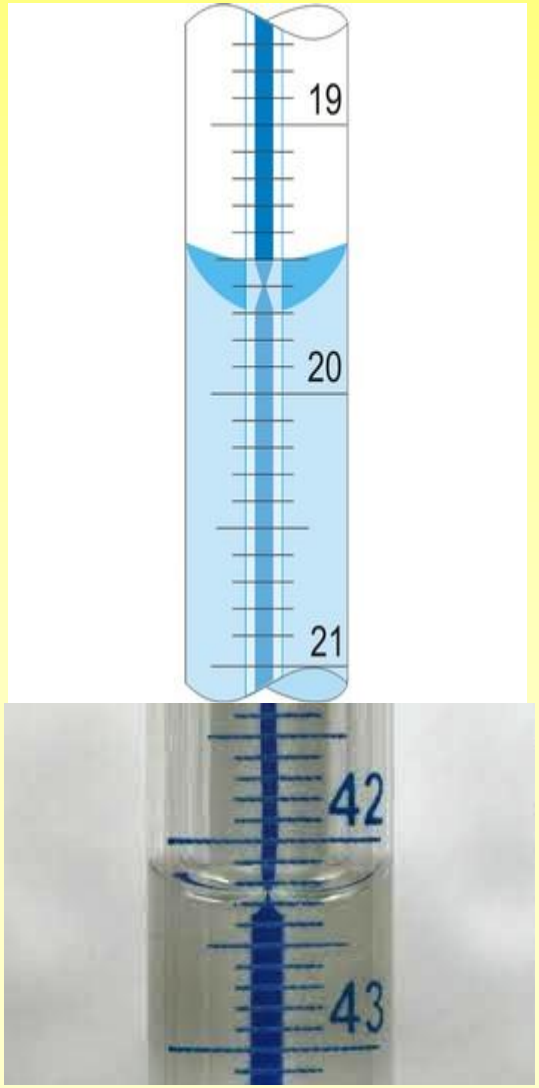
Parallax error



At the time of reading from a pipette or burette eye of the beholder should be at the same level as the liquid, which allows avoid an error.

Burette or pipette with Schellbach stripe

- With Schellbach stripe

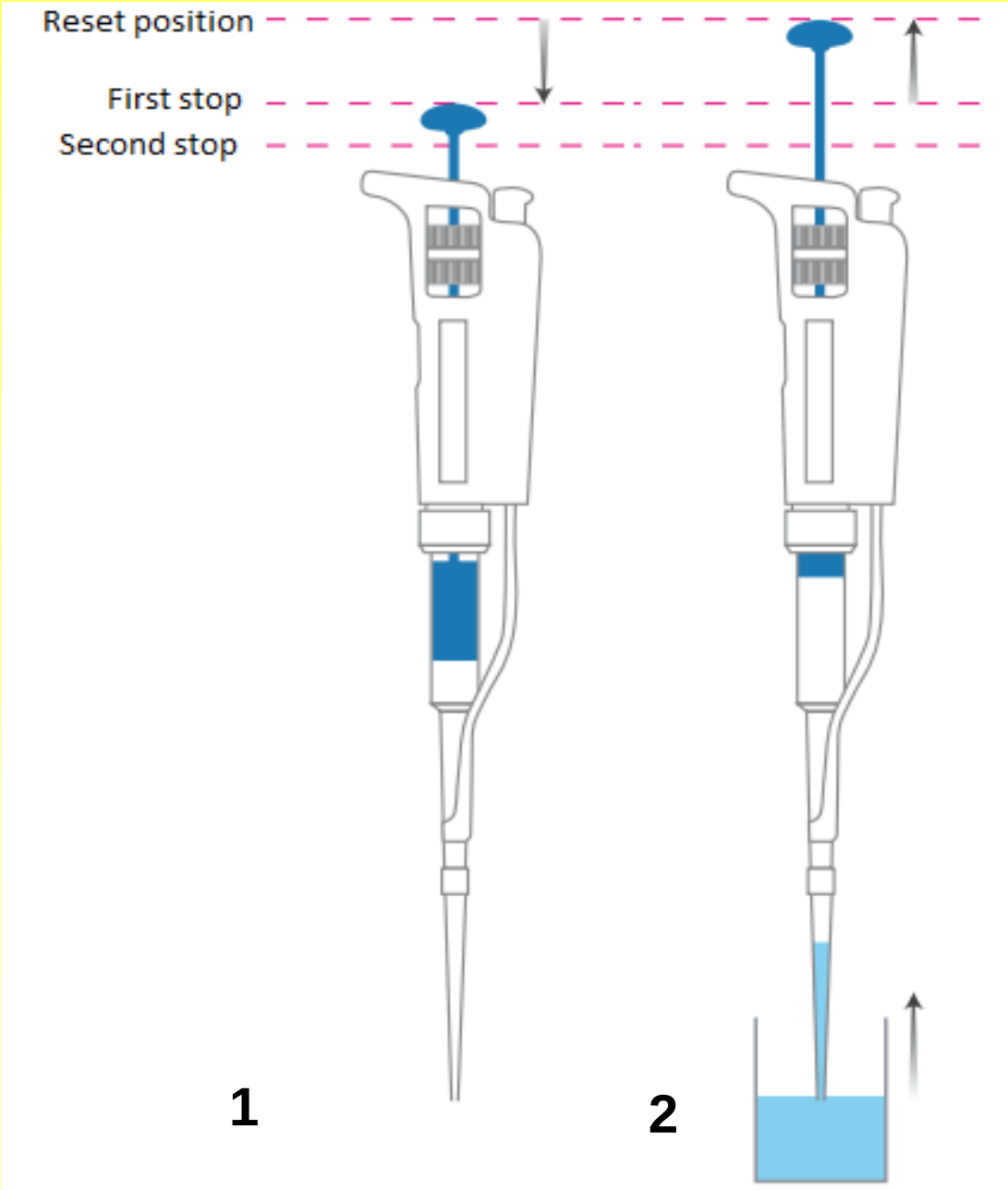


- Withaut Schellbach stripe

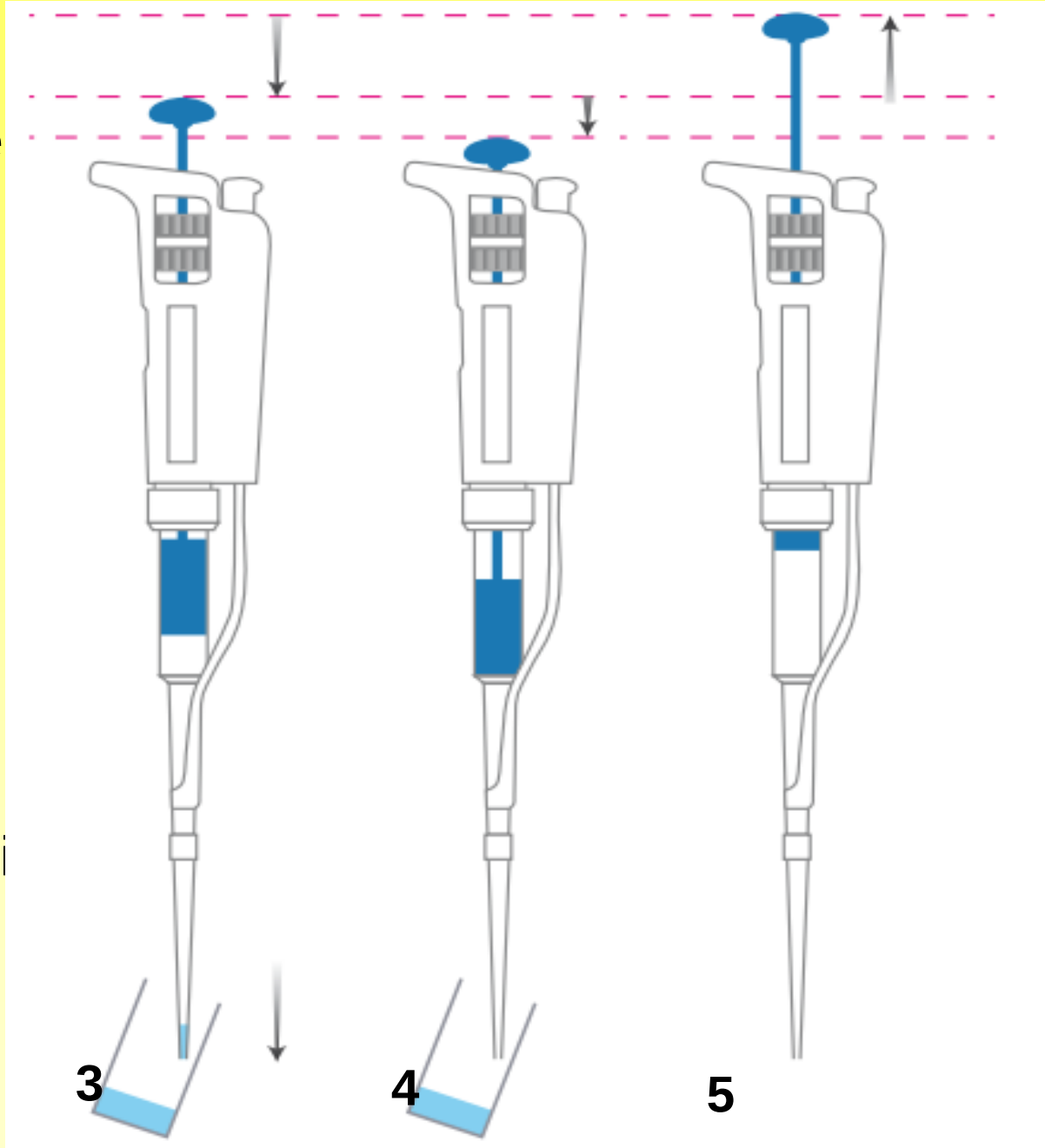
Automatic pipettes

1. Depress the piston smoothly to the first stop position

2. Immerse the pipette tip in the liquid. Allow the piston to move up smoothly to the reset position. Wait one second so that all the liquid has time to move up into the tip.



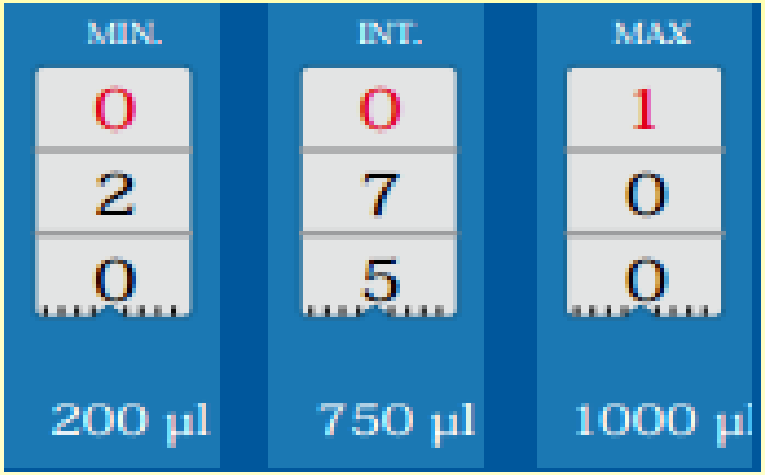
3. Place the pipette tip at an angle (10 to 45°) against the inside wall of the receiving vessel. Depress the piston smoothly to the first stop position
4. Wait one second, then depress the piston to the second stop position. This “blow-out” stroke removes any remaining sample from the tip. Remove pipette tip end from sidewall by sliding i up the wall.
5. Allow the piston to move up to the reset position



Setting volume on automatic pipettes

Pipette 50 µl – 200 µl

Pipette 200 µl – 1000 µl



The volume is displayed as three digits witch are read from top to bottom. The figure on the left shows the minimum (MIN) , intermediate(INT) and maximum (MAX) volume settings.

Description of laboratory glass

Erlenmeyer Flask

-Features a conical base, a cylindrical neck and a flat bottom.

-They are marked on the side (graduated) to indicate the approximate volume of their contents.

-Allows contents to be swirled or stirred during an experiment – narrow neck keeps the contents from spilling out

-This is not ussed for accurate measurment

Volumetric Flask

-A volumetric flask is used to measure very precisely one specific volume of liquid (100 ml, 250mletc., depending on with flask you use

-This flask is used to prepare a solution of known concentration

- To make up a solution, first dissolve the solid material completly, in less fluid than requied to fill the flask to the mark
- After the solid is completly dissolved, very carefully fill the flask to the **ml** mark.
- The top is then scaled and the flask is inverted several Times to mix.

Test Tube

-A test tube is a common piece of laboratory glassware consisting of a finger-like length of glass or clear plastic tubing, open at the top and closed at the bottom.

Burette

-is a vertical cylindrical piece of laboratory glassware with a volumetric graduation on its full length and precision tap. It is used to dispense known amounts of a liquid reagent in experiments

Beaker

-Used for transferring liquid to another container or to transfer a small amount of reagent for use in procedures.

-Volume is not accurate, just an estimate.

Graduated cylinder

-used to accurately measure the volume of an liquid

-more accurate and precise for this purpose than flask and beakers