

MICROSCOPE SET INSTRUCTIONS

Welcome to the world of Advanced Optics®

We take great pleasure in introducing you to the world of Microscope. Microscope refers to an instrument with lenses for making very small near objects to appear larger. Because there are innumerable of living things that cannot be seen with our naked eyes, microscope enables these invisible living things to be seen effortlessly.

The discovery of microscope goes back many many years, and since the invention it has exposed to a new field of exploration and study as more attractive, and exquisite specimens as you ever imagined can be evidence.

In our new world of advanced technology, every science from the most fundamental study of biology to the highly skilled fields of astro-physiology will use some form of microscope. The mission of microscope allows anyone from all walks of life to better comprehend the complexity forms of living organisms or stagnant materials that construct this world in which we live in.

This microscope set will be the starting point to your many hours of fruition as a hobby or broader your opportunity to a wonderful world of science.

Happy Experimenting!!! Attention

Warning: Not suitable for children under 36 months due to small parts. Choking hazard. To be used under the direct supervision of an adult. This toy contains functional sharp needle, also functional sharp edge on scalpel and slicer.

Caution: Read the instructions before use, follow them and keep them for reference. Keep small children and animals away from experiments. Store the microscope set out of reach of small children.



If any time in the future you should need to dispose of this product please note that Waste Electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice. (Waste Electrical and Electronic Equipment Directive)

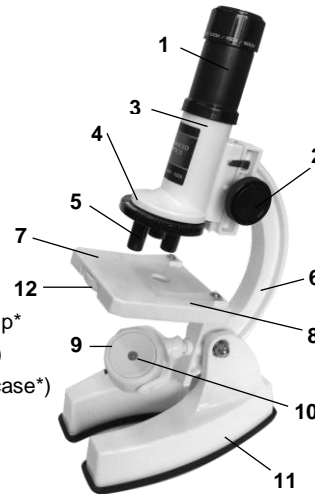
Note:

Only adults should install and replace batteries. Alkaline batteries are recommended. If the toy has not been used for a long time, remove the batteries.

Do not use rechargeable batteries
Do not mix old and new batteries.
Do not mix alkaline, standard (carbon zinc) or rechargeable (nickel cadmium) batteries.
Exhausted batteries are to be removed from the toy. The supply terminals are not to be short-circuited. Non-rechargeable batteries are not to be recharged. Rechargeable batteries are to be removed from the toy before being charged.
Rechargeable batteries are only to be charged under adult supervision.
Only batteries of the same or equivalent type as recommended are to be used.
Batteries are to be inserted with the correct polarity. Do not dispose of batteries in fire, batteries may explode or leak.
Batteries may explode or leak if misused.

Components of a Microscope

1. Eyepiece
2. Focusing knob
3. Body tube
4. Revolving turret
5. Objective lens
6. Arm
7. Stage
8. Clip
9. Mirror
10. Illuminator Lamp* (Light source lamp)
11. Base (Battery case*)
12. Colour Filter*



*Not applicable to item no. #8009

Helpful Hints

- The essential component of the microscope is the lens. Consequently, adequate care must be exercised when dealing with the lens.
- Microscope should be stored in a moisture free place. Because moisture build up on the light encourages a reduction in light concentration.
- After it is utilized, protect the microscope from dust by covering the microscope or placing it back into the box.
- If the lens gets dusty or dirty, it is suggested to clear off the lens surface with a soft cotton cloth or tissue. Do not rub the lens with a finger or unclean cloth.

Battery Installation

(Not applicable to item no. #8009)

1. Remove the LED lamp from the arc bracket.

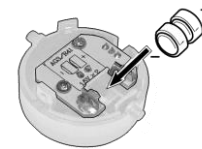


2. With a small Phillips screwdriver, loosen the screw on the side.

3. Carefully remove the mirror cover, make sure the glass mirror does not detach from the plastic frame.

4. Discard the old batteries.

5. Install two 1.5 Volt LR41/AG3 batteries per the polarity markings in the battery compartment.



6. Replace the mirror cover and tighten the screw.

7. Install the LED lamp back to the bracket.

Procedures

1. Tilt the body and adjust the location of the reflector. Therefore, the light is fully caught by the mirror.



2. When the light is fully reflected by the mirror, which can be seen via the eyepiece, the microscope will be ready for inspection.

3. Now put the prepared slide on the stage, and fasten it in place with the clips.

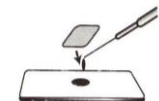


4. Next, choose which magnification strength you desire. Remember, the greater the length of the objective lens, the bigger the magnification. In general, inspection is usually made at a low setting.

5. To change the magnification strength, turn the revolving turret until you hear a click.



6. Using the focusing knob, let down the lens as close as possible to the prepared slide sans making interactions. Next, looking through the eyepiece, turn the knob anti-clockwise until the reflection achieves clarity.



7. If the experimenting room is dim with low intensity of light, or if the focus is unclear at extreme magnification, it is recommended to switch on the illuminator lamp and rotate it towards the stage.



8. The rotating colour/light filter makes it easier to observe the slide preparation. Using a suitable coloured filter heightens the contrast of coloured preparation slides. Furthermore, the different apertures will focus the light. When the large aperture is used the slide appears very bright. The smallest aperture is helpful when examining a certain area in more detail. (Not applicable to Item no. #8009)



How to Make a Prepared Slide

Please note that if the given specimen is not thin and crystalline, it cannot be inspected by the microscope. This is due to the fact that light from the reflector or light source does not advance through.

- Fiber of wool, pollen, or salt will be simple to see, and will not need a cover glass.
- Crystal-clear specimen are stain first with a drop or two drops of methylene blue. Eosin or other dyeing solutions are available on the market.

Also note these are dyeing solutions, and thus could induce staining of clothing, fabrics, and carpets. Extreme care should be handled when dealing with these solutions.

1. Temporary Mount

- Wipe the slide and cover glass clean
- Thin the sample with a razor blade. (Be extremely careful)
- Then pick it up with tweezers, and put it on the centre part of the glass slide.
- Next, add one drop of water on the sample with a dissecting needle. If the sample is clear, add one drop of methylene blue or eosin solutions. (Be extremely careful)
- Gently put the cover glass on it, take care not to let any air bubbles in it.
- Remove any excess water or dyeing solutions with blotting paper.
- Now, it is ready for observation.

Remember to wash your hands immediately after doing the preparations and dispose the dyeing solutions down the drain not into a sink.

2. Permanent Mount

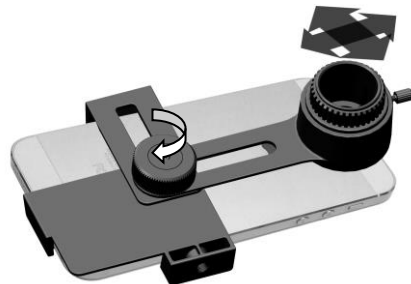
- Wipe the slide and cover glass clean.
- Continue as above but before covering the slide with the cover glass, add few drops of gum media (or Canada balsam) solution or transparent adhesive glue with a dissecting needle to the slide.
- Put down on the cover glass with tweezers or fix it in place, and leave it to dry for about a day.

Using the smartphone adaptor

1. Loosen the screw at the back of the adaptor and put the smartphone on it with face up.
2. Adjust the position of the horizontal arm to the width of the smartphone and tighten the screw just enough to keep the phone in position.



3. Align the centre of the adaptor hole of the swing arm to the smartphone camera. Tighten the screw so that the smartphone is securely held in the adaptor.



4. Loosen the small screw at the top. Attach the adaptor-smartphone assembly to the microscope eyepiece as shown. The adaptor should be fully inserted into the eyepiece for best results. Tighten the small screw. If the smartphone is heavy, it may be necessary to hold the setup in position by hand to prevent it from toppling.



5. With the camera app opened, re-adjust the smartphone camera position by slightly loosening the main adaptor screw if necessary. The image circle should be at the centre of the screen. Adjust the focus knob until the image is clear.

