



Optical Cleaning Procedures

Microscopes, like most precision tools, require some maintenance to ensure proper performance and a long service life. We have been servicing microscopes for over 35 years and can offer these tips on cleaning and maintaining your microscope system.

These operations are not a substitute for a professional microscope PM service where the optical as well as the mechanical adjustments and lubrication are addressed. A complete professional service should be considered as a yearly item for microscopes that are used continuously such as in a clinical laboratory or in industrial applications.

Precautions:

- Avoid rough handling of your microscope. Microscopes are precision instruments with optics that can be knocked out of alignment as well as damage to focus and stage fine motion controls. Use caution when moving your microscope to not carry the unit by the focus system or stage. When shipping a microscope for outside service or repair review packing instructions below.
- Avoid getting fingerprints, dust, or dirt on the lens surfaces. The oils in your fingerprints may damage the lense AR coatings over extended periods. It is recommended that the microscope be covered when not in use to prevent dust and other contaminants from entering the optical system.
- ***Always unplug equipment before attempting to make repairs or to perform cleaning operations.***

PACKING: Please ensure all microscopes are properly protected for shipment. I would suggest bubble wrap of the microscope module (multiple layers), place this in a close-fit box, then place this box in a larger box filled on all sides with Styrofoam packing 'peanuts'. This ensures no shifting of the optics during shipment. **Do not simply place the wrapped optics in a box of Styrofoam 'peanuts' – damage is almost guaranteed.**

Cleaning Materials:

The following materials are generally accepted for microscope cleaning by most microscope suppliers:

- Lint-free **Cotton Swabs** on wooden sticks – use only swabs that can be autoclaved (sterilized); non-sterile swabs usually have an adhesive that is dissolved by the cleaning fluids and than get deposited onto the lense surface creating an even greater cleaning issue.
- **Mild detergent** and water solution (SimpleGreen works well) for cleaning the frame/body.
- **Dry-nitrogen** compressed air or a camera 'bellow' lense cleaning duster (available at camera stores)
- **Lense cleaning solution:** Reagent or medical grade isopropyl – using a lesser grade alcohol will result in spotting on the lense surface as it evaporates (it will not wick cleanly onto the swab).

Lense Cleaning:

Eyepieces and objectives are the only optical items we recommend cleaning since they are exposed to oils, fingerprints, makeup, dust, etc. Internal mirrors (beam-splitters) and other optical components may have un-protected surfaces that can be very easily scratched when cleaning is attempted. Leave these to the professionals. Once they are damaged they cannot be repaired, only replaced. The best way to reduce cleaning necessity is to keep the microscope covered when not in use and never put your fingers on the optical surfaces.

The dust you see on objective lenses, mirrors, correcting plates eyepieces and filters is harmless and rarely effects the quality of your optics or image quality whatsoever. This dust can be removed using the dry-nitrogen air or the bellows type duster.

Most compressed air products for electronics or computers use solvents for their propellant and **SHOULD NEVER BE USED ON OPTICS**. These propellants will coat the lense with a film that is difficult to clean. A **low cost option** is a 'bellows' brush used for camera lense dusting and available at most camera stores.

Remove greases, makeup and oil from optics using the pure grade of isopropyl alcohol with lint-free cotton swabs. **NEVER use lens tissues made for eyeglasses**. The tissue materials used can damage the lense coatings and surface. Additionally, you may trap hard particles beneath the lense paper and scratch the surface.

Many optics suppliers like [oem-optical](#) offer cleaning kits with lense cleaning solution, bellows brush, lint-free wipes and lint-free cotton swabs meant specifically for optics cleaning.

Cleaning Directions:

1. Before cleaning optics, **all** particles must be blown off with either compressed air or a camera bellow brush.
2. Using a cotton swab, slightly dip only the cotton tip into your cleaning solution.
3. Shake off excess fluid from the swab. You do not want the swab overly wet, just moistened. Excessive amounts of cleaning solution may be wicked into a lense system and result in a distorted image. The lense surface **should not** be flooded with solution.
4. Using the cotton end of the stick, start at the center of the lense using a slow circular motion and work your way to the outer edge. Make sure to use **very light pressure** to prevent damaging the surface. The cleaning is accomplished by the wicking action of the swab, drawing the contaminates from the lense surface – you are not scrubbing it clean.
5. You can check on the cleaning result by gently breathing on the surface of the lense. The moisture in your breath will show any cleaning pattern which may be present. It is possible to use this moistened surface to provide the final polish to the lense. Use another clean swab and **GENTLY** polish in a circular motion from center to edge to remove the moisture.
6. Use the compressed air or bellows brush to blow off any residual debris.
7. A white light source can be used to see if all particles have been removed. An upside down eyepiece can be used as a magnifying tool to closely inspect the surface (look thru the bottom of the eyepiece). Makes for a convenient close-up lense.
8. If not clean, repeat procedure again **always** using fresh new lint-free swabs.
9. If the lense still will not come clean, [contact us](#) for other possible solutions to the problem.

Cleaning Stages and Stage Plates:

Stages can get pretty messy from examining biological or industrial specimens. Using just a lint free soft cloth with the mild detergent solution works best. Don't use an overly wet cloth as moisture may seep into the stand which may have electronics inside. ***It's always best to unplug equipment before attempting to make repairs or to perform cleaning.*** Do not use alcohol, acetone or other solvents on your instrument as they may cause damage to painted surfaces.

For glass stage plates, we recommend using mild soapy water and using your bare hands. Have a soft paper or cloth towel to set the glass on after you've washed and rinsed your glass. Carefully dry the glass. It can be a bit damp and let the air dry the glass completely. If you used distilled water, the glass will dry without leaving mineral deposits. Then, by holding the glass by the edges, drop the glass back into the stage and tighten down the locking thumbscrew.