

## 8 Cleaning and Disinfection

### 8.1 Safety During Cleaning

#### CAUTION!

#### Cleaning lenses too frequently

can damage optic surfaces.

- ▶ Clean optics only when necessary.
- ▶ Keep the protective cover on the instrument when not in use.

### 8.2 Cleaning Agents

Cleaning Agent	Use
Distilled water, 70% isopropyl alcohol in water, mild, ammonia-free glass cleaner, or alcohol wipes	instrument covers, chinrest, and forehead rest
Volk LensPen® cleaning pen	front lens
Optical cleaning set, Safebuds, or cotton ball sticks	front lens
Microfiber cloth	front lens

### 8.3 Cleaning the Front Lens

#### NOTE

#### Using harsh cleaning agents

may damage the device.

- ▶ Use only the recommended cleaning materials.

#### 8.3.1 Removing Fluid Splashes

The most common cause of minor fluid contamination is from the patient's tears splashing onto the lens when the patient blinks. These drops show up in images as light spots.

*Action*

1. Start in the center of the lens surface and wipe in widening circles with the felt end of the LensPen, applying gentle pressure.
2. If the bright spots remain after repeated wiping, refer to Removing Severe Contamination [▶ 150].

#### 8.3.2 Removing Minor Dust Accumulation

*Action*

1. Use the brush side of the LensPen or the brush provided in the cleaning set to quickly remove dust or other loose particles.

2. If dust remains, start in the center of the lens surface and wipe in widening circles with the felt end of the LensPen, applying gentle pressure.
3. After using the felt tip, replace the protective cap and rotate it three or four times.

### 8.3.3 Removing Severe Contamination

More serious contamination may result from patients sneezing or touching the lens with their nose or fingers. This causes distinct bright areas on the image.

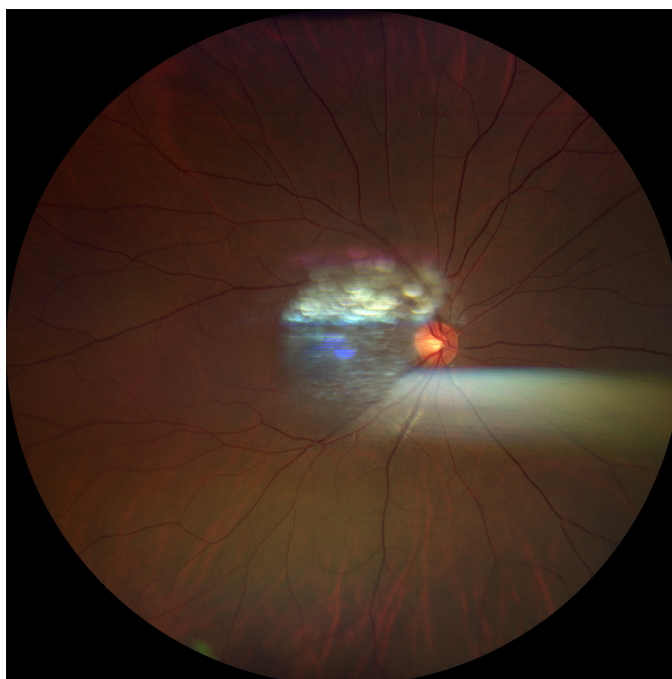


Figure 21: Fundus Image with Fingerprint Contamination

#### Action

1. Using moist disposable cloths or microfiber cloths, cotton ball sticks, or Safebuds sprayed with cleaning fluid, start in the center of the lens surface and wipe in widening circles. Do not allow your fingers to touch the lens surface as you clean.
2. Repeat as needed, using a clean portion of the cloth each time.
3. Verify that smudges and streaks have been removed by breathing on the lens.
4. Use the felt end of the LensPen to remove any remaining residue.
5. To verify that cleaning has been successful, take a photograph in a darkened room. Check the resulting image for bright spots.

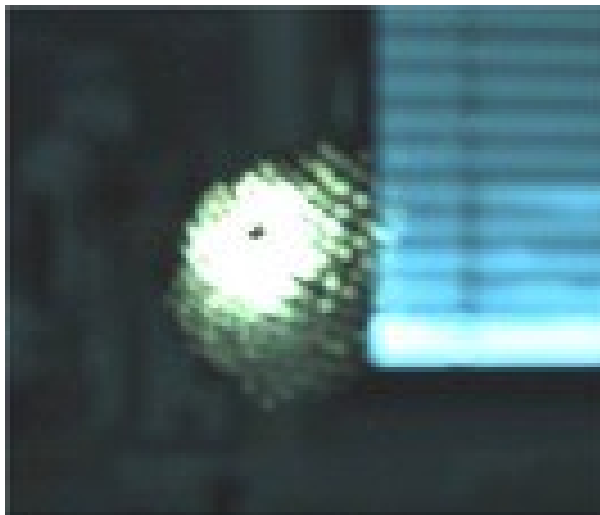


Figure 22: Residual Bright Spots after Cleaning

## 8.4 Cleaning the Front Window Lens

### 8.4.1 Cleaning Heavy Contamination

Fingerprints, oil, or water spots should be cleaned immediately. Skin acids attack coatings and glass, and can leave permanent stains. Cleaning with solvents alone tends to redistribute grime. These contaminants must be lifted from an optical surface with soap or other wetting agent. The optic is then rinsed in water and the water removed with alcohol. Acetone helps speed drying and helps eliminate streaks from forming.

#### Action

1. Blow off dust.
2. Using a soap-saturated lens tissue placed around a swab, wipe the optic gently in a figure-eight motion.
3. Repeat as necessary.
4. Repeat this procedure with distilled water.
5. Repeat again with alcohol.
6. Repeat once more with acetone.

### 8.4.2 Brush Cleaning Method

This technique is ideal for cleaning smaller optics, including lenses, and involves holding a folded lens tissue with a hemostat to brush the surface clean.

## NOTE

### Edges on mounted optics

are often hard to reach.

- ▶ Wrap a lens tissue around a swab.
- ▶ Soak the covered swab in acetone.
- ▶ Brush around the edge of the lens and then across the middle using a continuous figure-eight stroke.
- ▶ Repeat if necessary.

#### Action

1. Fold a lens tissue so as not to touch the part of the tissue that will make contact with the optic. The fold should be about as wide as the optic.
2. Hold the tissue with hemostats parallel to and near the fold.
3. While holding the optic, using tweezers if necessary, blow off any dust.
4. Soak the tissue with acetone.
5. Brush the fold in the tissue across the surface of the optic using light pressure.
6. Repeat as necessary until the optic is clean, making sure new lens tissue is exposed with each wipe.

### 8.4.3 Wipe Cleaning Method

For heavier cleaning of lenses and mirrors, this method involves wiping an optic with a lens tissue by hand.

#### Action

1. Blow off dust.
2. Fold a lens tissue as with the brush method.
3. Apply acetone to the tissue.
4. Holding the lens tissue in your hand with the fold near the tip of your fingers, apply uniform pressure while gently wiping across the surface of the optic.
5. Repeat as necessary until the optic is clean, making sure new lens tissue is exposed with each wipe.

### 8.4.4 Dust Cleaning

Dust on optics can be very tightly bound by static electricity. Blowing removes some dirt; the remainder can be collected by the surface tension of a wet alcohol swab. Acetone helps promote rapid drying of the optic to eliminate streaks.

#### Action

1. Blow off dust.
2. If any dust remains, twist lens tissue around a swab, soak in alcohol, and wipe the optic in one direction with a gentle figure-eight motion.
3. Repeat as necessary.
4. Repeat the steps above, using acetone.

## 8.5 Cleaning the Chinrest and Forehead Support

### NOTE

**Do not spray cleaner directly on the chin rest or forehead support.**

*Action*

- ▶ Before each use, wipe the chinrest and forehead support with a non-acetone based spray or disinfectant wipe.

## 8.6 Peripherals and Table

### NOTE

**Do not spray cleaner directly on the peripherals or instrument table.**

*Action*

1. Regularly dust or wipe down the instrument table.

## 8.7 Cleaning the PC Screen

### NOTE

**Do not spray cleaner directly on the touch screen.**

*Action*

1. Turn OFF the instrument before cleaning the touch screen.
2. Wipe gently with a cloth that has been sprayed with a mild glass cleaner containing no ammonia.