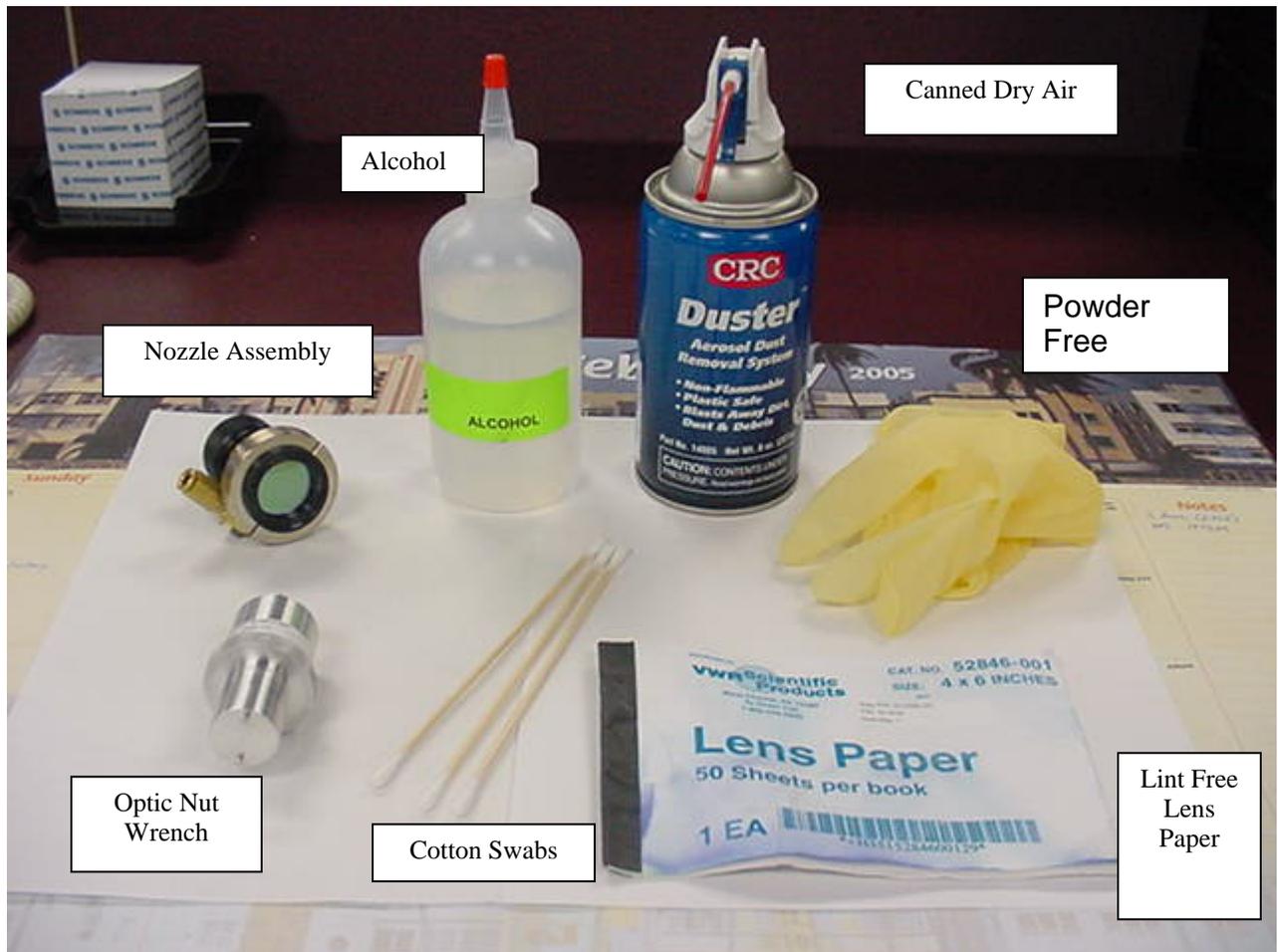




## Lens Cleaning Procedure

1. Assemble the following cleaning components as depicted in **Figure 1**.



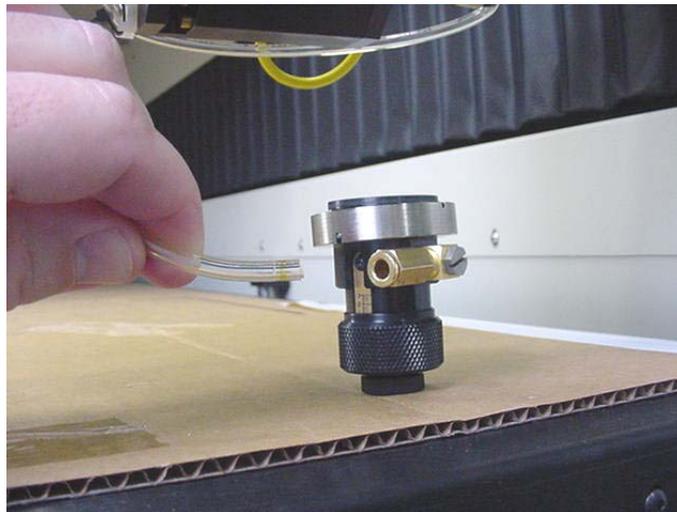
**Figure 1.** Lens Cleaning Kit Components

2. Remove the nozzle assembly as shown in **Figure 2**. The assembly is held in place with magnets.



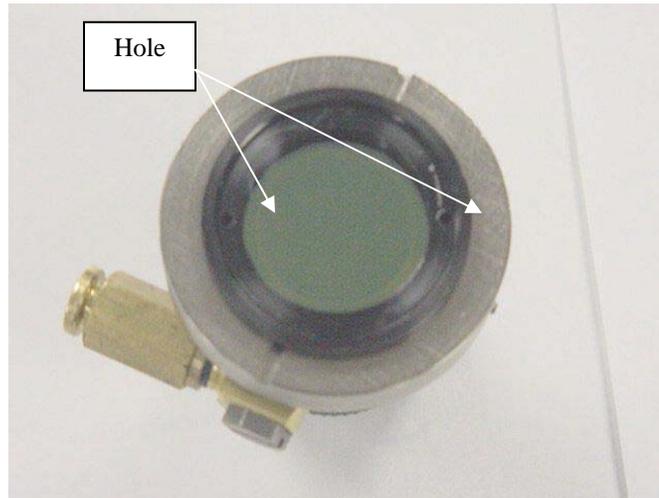
**Figure 2.** Nozzle Assembly Removal

3. Set the nozzle assembly on the table and remove the gas assist tubing. Take care to not touch the optic window with your fingers. **See Figure 3.**



**Figure 3.** Nozzle Assembly – Remove Assist Gas Tube

4. Once the nozzle assembly is completely removed you need to remove the optic window from the assembly and clean it on both sides. The optic window is held in place with a threaded ring nut. Note the two holes in the top of the nut. **See Figure 4.**



**Figure 4.** Nozzle Assembly – Top View

5. Align the optic nut wrench pins with the two holes in the optic nut and press together. **See Figure 5.** Take great care to not scratch the optic window with the wrench. If you scratch the window, you will need to replace it.



**Figure 5.** Optic Nut Removal

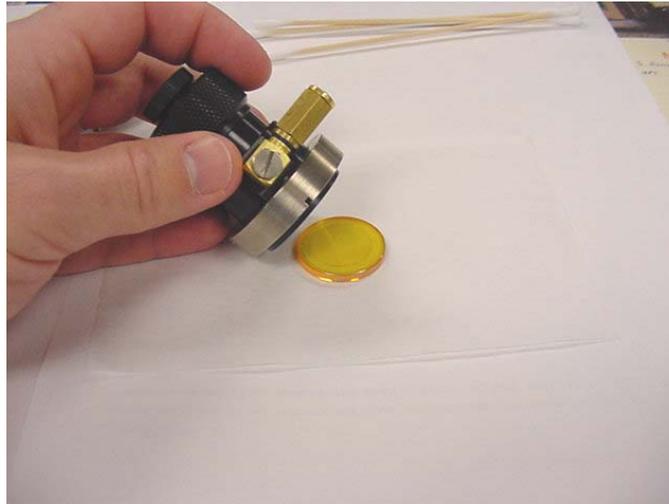


6. Once the wrench has been completely inserted, the nut can be removed by twisting the tool counter-clockwise. Once the nut has been removed, leave it on the wrench and set it aside. **See Figure 6.**



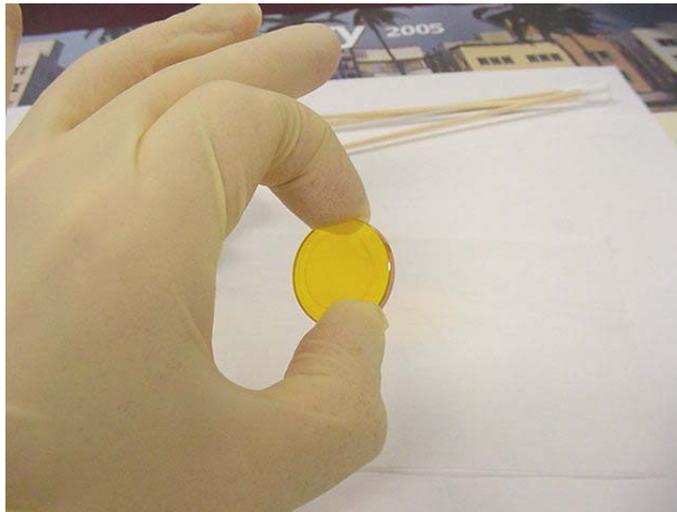
**Figure 6.** Optic Nut Removed

7. Place a new, clean piece of the lint free lens paper on a flat stable work surface. Allow the optic window to drop onto the lens paper by turning the nozzle assembly upside down. If the optic window doesn't drop onto the paper easily, it may be sticking to the rubber O-ring that seals it. In this case lightly tap the assembly on the paper until the window drops out. The optic window is now ready for cleaning. **See Figure 7.**



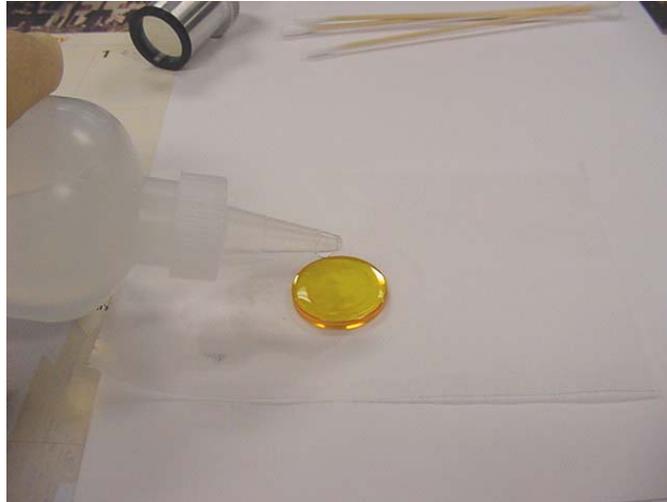
**Figure 7.** Optic Window Removal

- At this point you should put on gloves or at the very least a glove on your left hand. The optic window should never be handled with bare fingers. The most important point to remember is that the optic window has a very delicate coating that must be protected. If the coating is damaged the window will not transmit the laser beam efficiently and system performance will degrade. These optic windows are \$135.00 each. You should always handle the optic window with gloves and hold it by the edges. Inspect the window visually at this point to determine how dirty the lens actually is. See **Figure 8**.



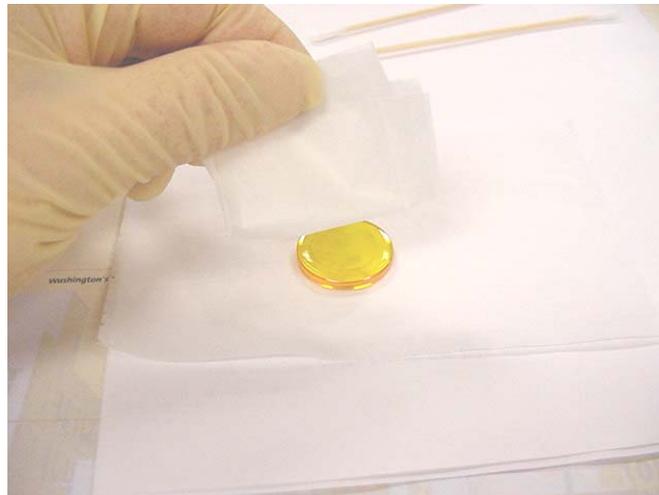
**Figure 8.** Optic Window Handling

- Lay the optic window on your clean piece of lint paper and puddle alcohol on it. Let the alcohol soak the window for a few seconds, just don't let the window dry out. It's important to keep the optic window wet during the cleaning process. See **Figure 9**.



**Figure 9.** Optic Window Cleaning with Alcohol

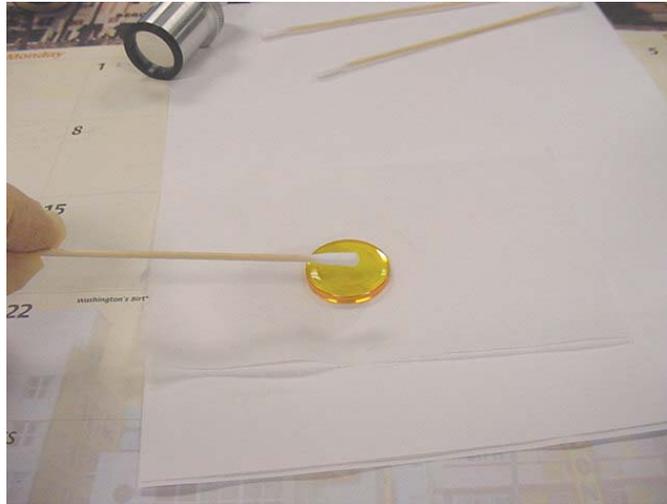
10. Bunch or fold up a clean piece of lens paper and lightly swirl or stroke the puddle of alcohol with minimal pressure. **See Figure 10.** Wash the puddle of alcohol and debris away with more alcohol. It may be necessary to repeat this process several times to clean the window. Note: The optic nut will leave a black or dark ring on the lens where it contacts it. Most of the ring will come off when you clean the window, but do not scrub the window to get it all off or you risk damaging the coating. Make sure you clean both sides of the window.



**Figure 10.** Optic Window Cleaning with Lens Paper

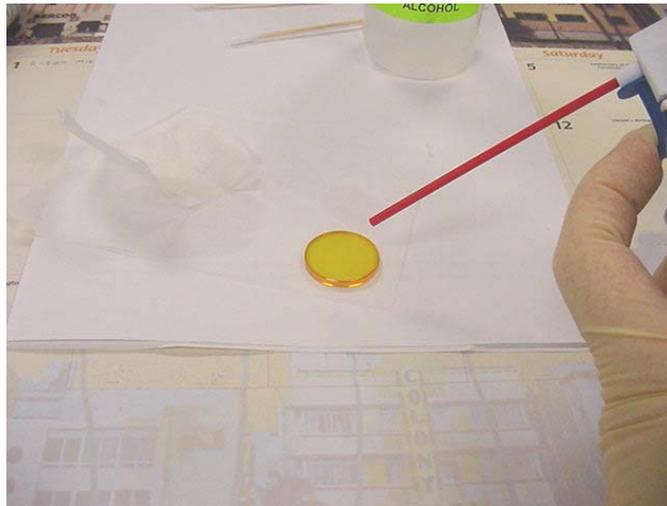


11. Sometimes the stains on the window will require the use of a cotton swab to clean it. Using a cotton swab from the very end of the stick and using very gentle pressure, stroke the window from side to side. **See Figure 11.** You may also use acetone to clean the window, but always try alcohol first. Acetone flashes off very quickly and may cause spots on the window.



**Figure 11.** Optic Window Cleaning with Swab

12. Once the optic window is clean, blow off all the remaining alcohol with canned air. **See Figure 12.** You will most likely need to pick it up with your gloved hand to completely blow off all the alcohol. Once the optic window is dry, inspect it by holding it up to the light to make sure the window is clean, scratch free, and there are no alcohol stains left behind. The window must be as clean and transparent as possible.



**Figure 12.** Optic Window Cleaning with Canned Air

13. Place the clean, dry, and scratch free lens using your gloved hand into the top of the nozzle assembly. Remember to handle the window by the edges. See **Figure 13**.



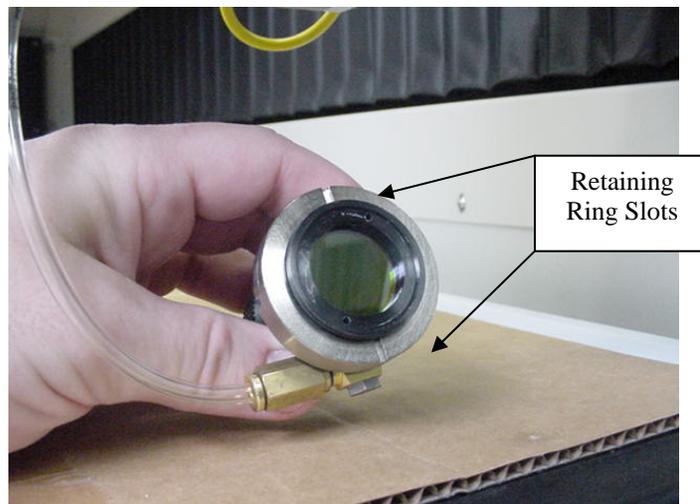
**Figure 13.** Optic Window Replacement

14. Replace the optic window nut with the wrench using a clockwise turning motion. Twist it finger tight. Do not over tighten or you risk damaging or breaking the optic window. See **Figure 14**.



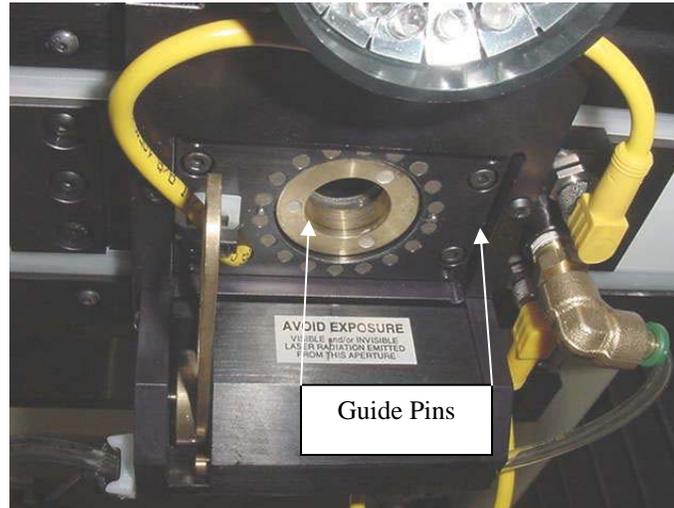
**Figure 14.** Optic Nut Replacement

15. Once the optic window has been replaced and secured you are ready to reinstall the nozzle assembly back on the machine. Make sure you don't touch the window with your finger or glove at this point. Reinsert the gas assist tube into the nozzle assembly. See **Figure 15**.



**Figure 15.** Nozzle Assembly – Connect Gas Assist

16. The nozzle assembly is held in place with magnets and positioned by two guide pins. See **Figure 16**. The assembly will snap into place once you position it correctly.



**Figure 16.** Nozzle Assembly Magnetic Mounting / Pins