

Basic System Maintenance

Keeping the VersaLASER clean will ensure the highest quality performance and prolong the lifetime of the mechanical components. The frequency of cleaning will depend entirely on the type of material being processed, the performance of your exhaust system, the operating environment, and the amount of laser system usage. Dirt or debris that is allowed to build up on the motion system components may cause a poor quality image, loss of mechanical position, and may cause premature mechanical component failure. Optical contamination will result in loss of laser power, or premature failure of the optic. Use good judgment and keep in mind that a clean machine is the best performing machine.

WARNING

Failure to properly and adequately maintain your VersaLASER may invalidate your warranty.

Safety

- Always make sure that the VersaLASER is powered off and is unplugged before performing any cleaning or maintenance procedure.
- When using any chemical, be sure to follow the safe handling procedure printed on its label.
- **NEVER** pour or spray any chemical directly onto or into the VersaLASER. Always dampen your cotton swab, paper towel, or cloth, with the cleaning solution, outside of the machine and then wipe down the appropriate part.
- Use only the appropriate chemical to clean specific parts of the system otherwise cosmetic or operational damage may occur. Pay strict attention to the cleaning procedures outlined in this section. Unapproved chemicals and inappropriate cleaning methods may invalidate your warranty.

Cleaning and Maintenance Supplies

- Vacuum cleaner
- Soap solution mixture of 1 tablespoon (2 cl) liquid soap and 1 quart (liter) of water in a spray bottle
- Paper towels, cotton cloth or terrycloth, normal facial tissue
- Denatured alcohol
- Regular acetone and reagent grade acetone
- Cotton swabs
- Lens cleaner (supplied)
- Set of Allen wrenches sized from .050 to 3/16 inch

Optics

A visual inspection of the optics should be performed at least once a day. If the optic appears cloudy or has material deposits formed on the surface, it should be cleaned. If, after inspection, the optic appears visually uncontaminated, **DO NOT** clean the optic. Excessive cleaning can damage the optic. The guidelines listed below describe how to handle optics:

Optics Handling Guidelines

- Wash your hands thoroughly before handling any optic.
- **NEVER** touch the surface of the optic with your fingers.
- **NEVER** clean any optic immediately after using the VersaLASER. Wait for the optic to cool, at least 3-5 minutes, otherwise it may crack from thermal shock.
- **DO NOT** use compressed air to clean the optic.
- **DO NOT** clean an optic that is visually clean. Excessive cleaning may damage the optical coating.
- Use only cotton swabs and approved lens cleaner or reagent grade acetone to clean the optics.



Optics Cleaning Procedure

- Dampen an unused cotton swab with lens cleaner.
- **GENTLY** wipe the optical surface with the damp swab. **DO NOT RUB HARD.**
- Control the wiping speed so that you do not leave streaks. If streaks remain, dampen an unused cotton swab with reagent grade acetone and gently wipe the optical surface to remove the streaks.

Accessing the Optics

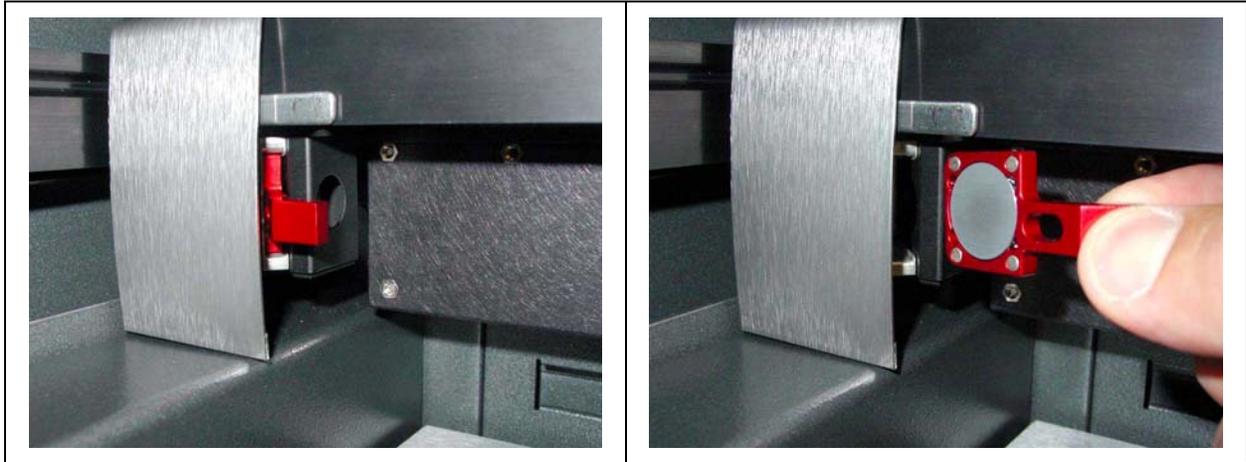


1. Slowly slide the X-axis Arm forward.
2. Grasp the bottom lip of the cover.



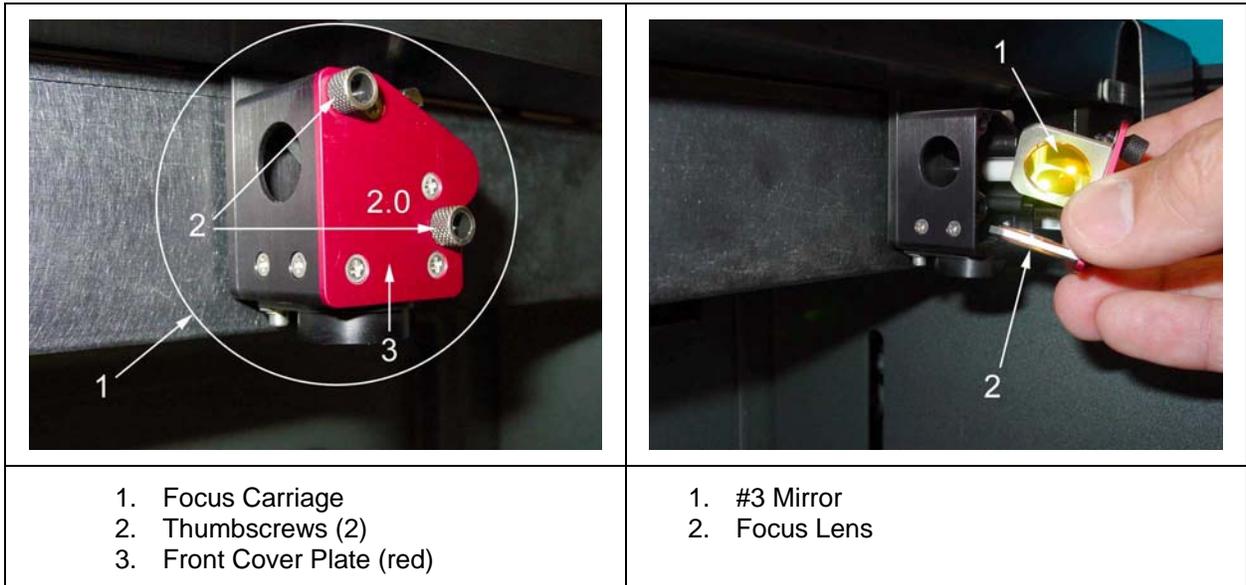
1. Rotate the cover up and over the top of the X-axis Arm. The cover is held down by magnets so it may “stick” slightly when you first begin to pull it forward.

#2 Mirror



- Locate the #2 Mirror Holder (red). Grasp its protruding handle with your thumb and forefinger and slide it out. It is held in place by magnets so you may feel a slight resistance when you begin to slide it out. The picture reveals the backside of the mirror.
- Turn the #2 Mirror Holder over and inspect the optic for visual contamination. Clean as necessary.
- Re-insert the #2 Mirror Holder by sliding it into the mounting slot until it stops. **NOTE: Installing the mirror backwards will cause the handle to protrude in such a way that the X-axis Arm cover will not close properly and will destroy the mirror once the laser beam penetrates the backside of the mirror so be sure that you re-install the mirror correctly.**

#3 Mirror and Focus Lens



- Loosen the two thumbscrews completely. They are held captive by retaining clips so they will not come out all the way.
- Grasp the Front Cover Plate. Gently slide it forward and out of the Focus Carriage.
- Inspect the #3 Mirror and focus lens and clean as necessary. Be sure to inspect the top and bottom side of the Focus Lens.

Beam Window

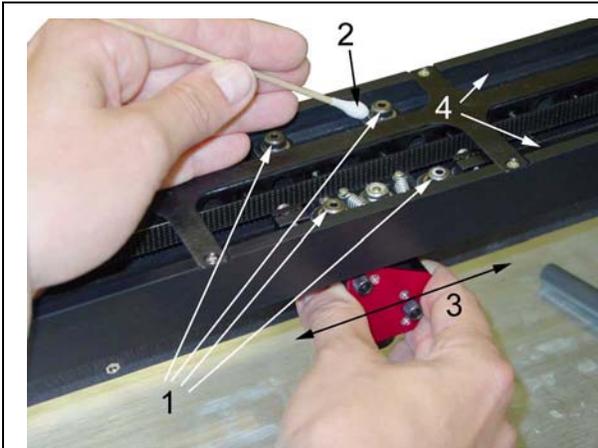
- The Beam Window is where the laser beam enters into the processing area. It is located in the upper left hand corner, towards the rear of the machine.
- It is only necessary to clean the front side of the Beam Window. The backside is in a sealed environment and should not get contaminated.
- **DO NOT** remove the Beam Window for inspection or cleaning. Inspect the optic in place and clean if necessary.



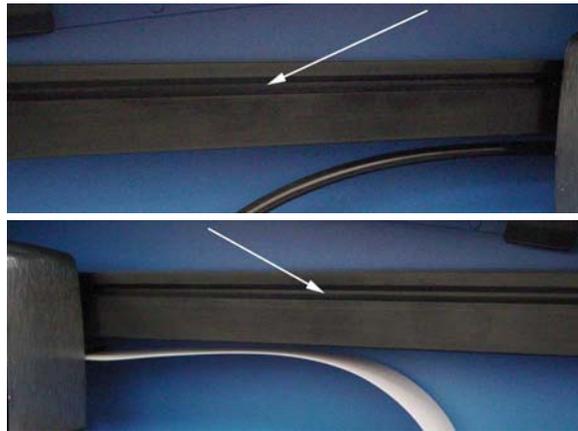
1. Beam Window

The Motion System

- Using a vacuum cleaner, vacuum all loose dirt and debris from the inside of the device.
- Outside the device, dampen a paper towel, cotton cloth, or terry cloth with the soap solution, alcohol, or acetone and wipe down the Z-axis Table. Be careful not to spill any chemical on any painted surface.



- Locate the four X-axis Bearings (1). Dampen a cotton swab with either the soap solution or alcohol. Place the dampened swab against the bearing (2), grasp the focus carriage (3), slide the focus carriage left and right, allowing the bearing to roll in the v-groove (4). Pay attention to the part of the bearing that contacts the v-groove both on the top and the bottom side of the bearing. Also, use the dampened swab to clean the v-groove (4). Make sure you clean all 4 bearings.



- Locate the left and right side Y-axis Rails and their respective v-grooves as the arrows in the photos indicate. This is where the Y-axis Bearings (not visible) make contact with the rail. Dampen a cotton swab or cotton cloth with either the soap solution or alcohol, and clean the v-groove. Gently slide the X-axis Arm towards the front or rear of the device so that you have access to the entire length of the v-groove.

The Main Enclosure

- Clean the acrylic user door with a non-abrasive cotton cloth or facial tissue and the soap solution. The top window is made out of acrylic. **DO NOT** use paper towels because they will scratch the acrylic. Also, **DO NOT** use window cleaner, alcohol, or acetone, as these chemicals will crack the acrylic. Only use cleaners compatible with acrylic.
- Use a soft cloth dampened with the soap solution to clean the enclosure. **DO NOT** use alcohol, acetone, or any other harsh chemical, as this will damage the paint.

Adjustments and Lubrication

- Periodic adjustments are not required.
- The bearings in the motion system will self adjust to take up any clearances as they begin to wear. All bearings in the system are sealed and do not require lubrication. **DO NOT** lubricate the bearings.
- The belts are fiber reinforced and will not stretch under normal use.
- Optical alignment is not necessary under normal use.

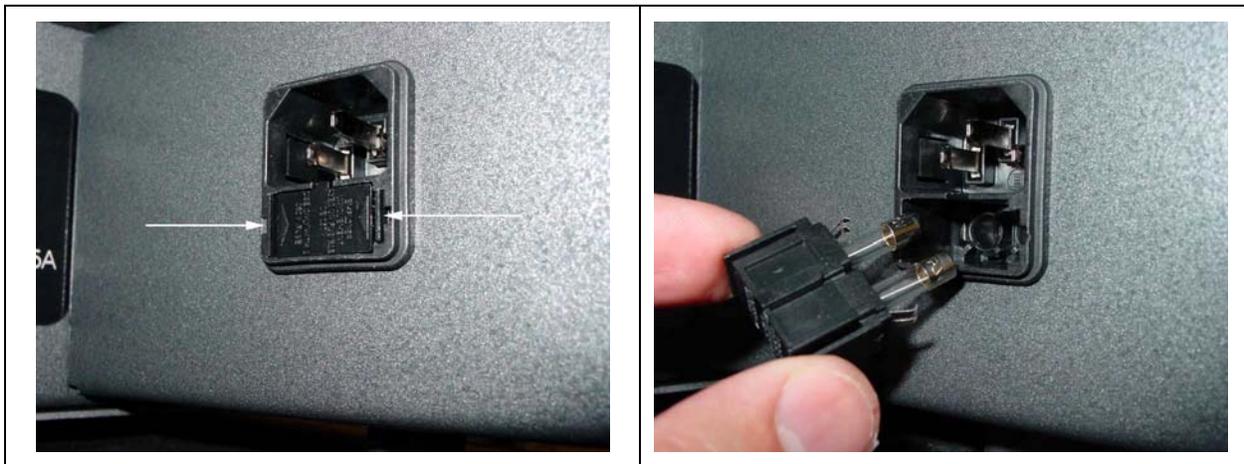
Interlock Safety Check

As mentioned earlier in the Safety section of this manual, the user door is safety interlocked. To verify that it is functioning normally, perform the following test:

Power on the VersaLASER. Without any job running, open and close the user door. Observe the Red Dot Pointer turning on and off respectively. If there is no change while opening and closing the door, power off the VersaLASER and contact our Technical Support Department immediately. **DO NOT** use the device until the problem has been corrected.

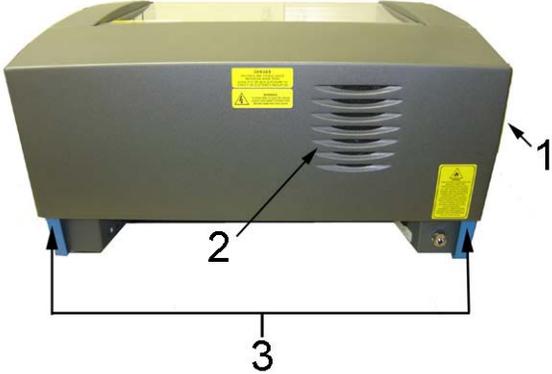
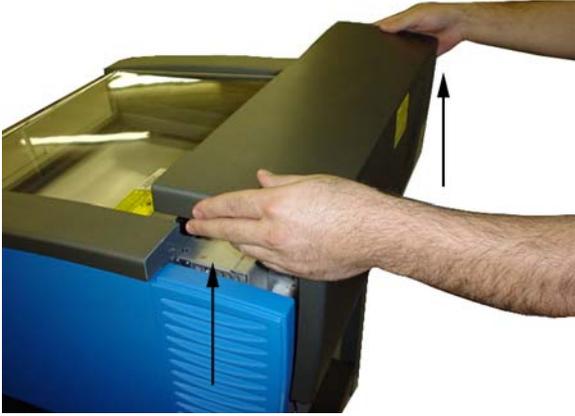
Fuse Replacement

If the power input fuses are blown, this indicates that there is a problem with a component inside the VersaLASER and that component must be repaired or replaced otherwise the replacement fuses will blow also. Please contact our Customer Support Department if the fuses blow.



The fuses are located on the bottom of the power input plug receptacle. To remove and check or replace the fuses, use a small screwdriver or your fingernails to push the two retaining tabs (arrows) toward each other and pull out the fuse holder. Pull out the two fuses from the holder and check them with an ohmmeter or for visual damage. When reinstalling the fuses, be sure to push the holder in all the way until it “clicks” into position.

Cooling Fan Filters

	
<ol style="list-style-type: none"> 1. Side cooling fan filter (inside cover) 2. Rear cooling fan filter (inside cover) 3. Rear cover mounting screws 	<ol style="list-style-type: none"> 4. Lift the cover straight up and off

The side (#1) and rear (#2) cooling fan filters are located inside the Rear Cover. To access them, remove the two mounting screws (#3) underneath the rear of the system. Lift the cover straight up and off. Locate the filters on the inside of the cover (not shown). Remove the plastic retainer and the filter media. Rinse the filter media with soap and water. Allow them to air dry off or dry them off before re-installing.

Maintenance Schedule

Since the maintenance requirements of the VersaLASER is dependent on the type of material being run, the quantity of material being removed, the hours of operation, and the quality of the exhaust blower, it must be user defined.

However, as a starting point, we recommend the following schedule:

- As necessary
 - Work Table
 - Main enclosure
 - User door
- Every 8 hours of processing
 - Clean X-axis bearings and bearing tracks
 - Check Beam window, #2 Mirror, #3 Mirror, and Focus Lens for debris. Clean **ONLY** if dirty.
- Every month
 - Clean side and rear cooling fan filters
- Every 6 months
 - Exhaust plenum

If you are noticing a considerable buildup of debris on the optics and the motion system, clean the system at more frequent intervals. If your system has remained relatively clean, you can extend your cleaning intervals. Keep in mind that a clean machine is a better performing machine and can extend the life of the parts as well as reduce the possibility of down time. If you have any questions about maintaining the laser system, please contact our Customer Support Department.