

SECTION 8: CLEANING & MAINTENANCE

Reduce Fire Risk with a Clean Laser

Reduce Fire Risk with a Clean Laser



Cleaning the laser is an excellent way to prevent fire with the laser. A buildup of cutting and engraving residue and debris is dangerous and can create a fire hazard in its own right. Keep your laser system clean and free of debris. Regularly remove the Vector Cutting Table to clean any small pieces that have fallen through the grid.

For more information on fire safety, see “Fire Warning” on page 5.

Cleaning the Auto Focus Plunger

The plunger for the Auto Focus assembly is mounted at the back of the carriage that holds the focus lens. The bottom of the shaft needs to be cleaned periodically for accurate focusing. Use a cotton rag and some mild household cleaner (Windex, 409, or isopropyl alcohol) to remove buildup from the plunger.



Cleaning the Optics

About once a week, or if you notice dust building up, you will need to clean the optics (mirrors and lenses) of your laser. If smoke, resin, or other contaminants are allowed to accumulate they will reduce the available laser power and may cause damage to the optics.



Mirror

Focus Lens

The two optical components most likely to require cleaning are the focus lens and the mirror directly above it. The lens and mirror are a single assembly and can be removed from the machine for cleaning, but it is generally not necessary. If you need to remove the assembly for a more complete cleaning, remove the two 3/32” hex screws that hold the lens to the carriage.

To clean the optics, use a high-quality cotton swab moistened with the optics cleaner supplied in the accessory kit. Please read the label on the bottle carefully.

If you run out of the cleaner supplied by Epilog, Reagent or laboratory grade Acetone can be substituted. Another option is a 10 to 1 water to white vinegar mixture. This is very good at removing finger prints and other minerals which can be left behind on the optics. Also, if “Golden Grain” or “Everclear” are available in your area these are also good substitutes for the optical cleaning solution.



Never use Alcohol or Hardware grade Acetone, they contain impurities which can damage the optics in your machine.

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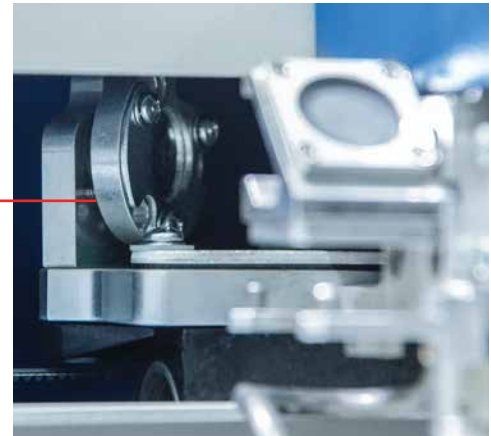
Cleaning the Optical Strip and Encoder

Wet the swab thoroughly with the solvent, and then blot it against a piece of cotton so that it is no longer soaking-wet. Then daub the optic gently, rotating the swab after each daub to expose clean cotton to the surface until the optic is free of visible contamination. At that point, prepare a fresh swab and clean the surface with a gentle zigzag motion across it. Avoid any hard “scrubbing” of the surface, especially while there are visible particles on it, and try not to use repetitive circular motions. When you are done, be careful to remove any cotton threads that may have snagged on the mountings. Allow the optics to dry before you operate your engraver.

In addition to the focus lens and the mirror directly above it, there is a mirror located on the left side of the laser system and is mounted to the X-beam.

This mirror is very well protected and should not need regular cleaning. It can be accessed with a cotton swab if it does need cleaning.

○ 2nd Focus Lens



Cleaning the Optical Strip and Encoder

If you engrave a lot of material that generates dust and debris, this can build up over time and prevent the optical encoder from working properly. Occasionally you may need to clean the optical encoder strip and the reader assembly. These are located under the protective cover of the X-axis assembly. The optical encoder provides precise positioning for the X-carriage. If the encoder reader or encoder strip gets dirty, the X-axis can lose position. If the X-axis carriage loses position, it is just a matter of removing the X-beam's protective cover and wiping off the optical encoder strip using a soft cotton cloth or cotton swab soaked in distilled water or a mild dish washing soap.

To remove the X-beam cover, turn off the laser and loosen the two screws in front of the cover and five in the rear of the cover. You do not need to remove the screws - they just need to be loosened to remove the cover. Lift the cover from the beam to expose the optical encoder and the optical strip.



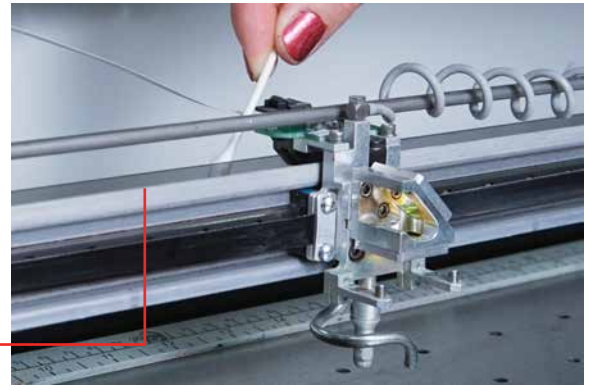
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Cleaning and Lubricating the Bearing Rails

The optical strip is a thin, clear piece of plastic that has very thin, small vertical lines on it. The strip runs the length of the X-beam from left to right. The cotton swab is shown on the rear side of the strip.

To clean, soak a cotton swab or cloth in distilled water and move the swab across the front and back of the optical strip along the entire length of the strip. A diluted mild dish soap can also be used to remove debris that water alone does not remove. Repeat with a second, clean swab with distilled water.

○ Optical Strip



The encoder reader is a horseshoe shaped device that straddles the encoder strip. There is a possibility that dirt and debris can get inside the encoder. Blow some compressed air under the encoder to remove any dust and debris.

Canned air like this is used for cleaning keyboards, but be very careful not to tip the can so that liquid is not sprayed from the can. The liquid coming from the canned air can damage the encoder reader.

Use gentle pressure when cleaning the optical encoder reader and strip. They are not easily damaged, but the use of excessive force or sharp tools could damage either device. Do not disassemble anything other than removing the cover from the X-beam. Replace the cover once the encoder strip and encoder have been cleaned.

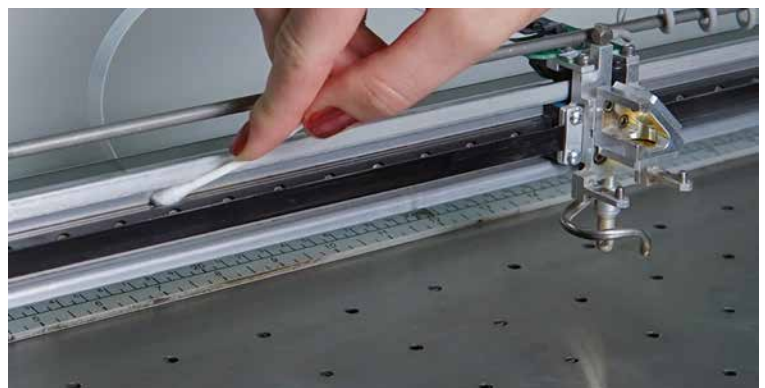
Cleaning and Lubricating the Bearing Rails

Clean the X-axis Bearing Rail

Use a soft cloth or cotton swab with some alcohol or similar mild solvent to clean each of the bearing tracks which the optics (mirror and lens) run along. A cotton swab is perfect for cleaning out the inside of the grooved tracks of the X-axis rail.

Use a soft cotton cloth or cotton swab to clean the entire length of the X-axis rail.

This photo shows a cotton swab cleaning out the top groove of the X-axis rail. There is another groove on the bottom side of the rail. You will need to move the X-axis belt out of the way to access the rail. There is enough flex in the belt to move it out of the way, but do not pull on it so hard that it becomes stretched or stressed.



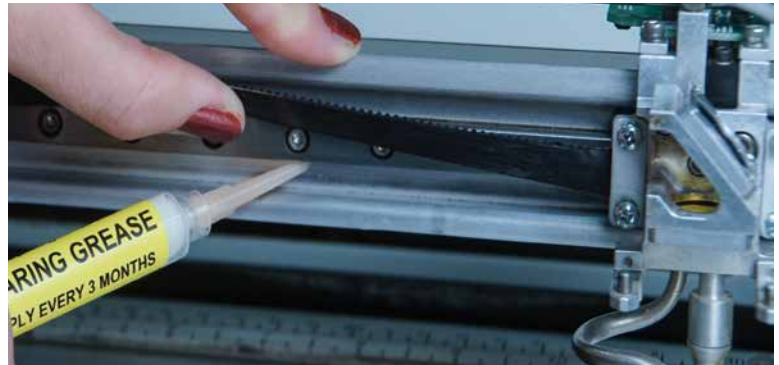
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Cleaning and Lubricating the Bearing Rails

Lubricate the X-axis Bearing Rail

After cleaning the rail, place about an inch long bead of Epilog supplied grease into the top and bottom grooves of the X-axis rail. The following photo shows where to grease the bottom groove of the rail.

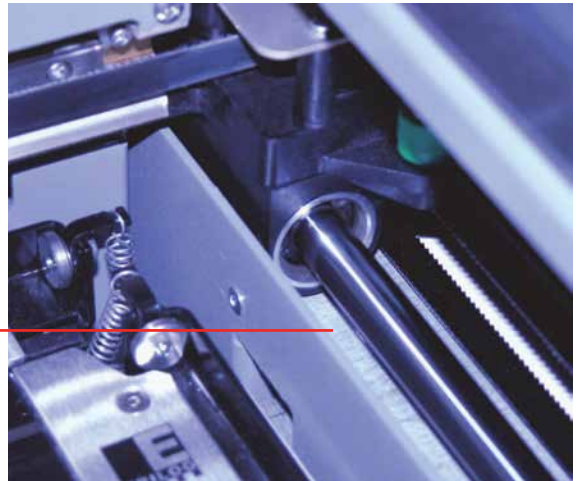
After applying the grease to both grooves, run the X-carriage over the grease to work it into the bearing block and rail. Turn the machine off to easily move the X-carriage back and forth over the grease.



Clean the Right Side Y-Axis Rail

Clean the length of the right side Y-axis rail using a soft cotton cloth. Lubrication is not required.

○ Clean the right side Y-axis rail with a soft cloth.



Clean the Left Side Y-Axis Rail

Clean the length of the left side Y-axis rail using a soft cotton cloth. Lubrication is not required.

After cleaning the rails and bearings, clean off the table and the rest of the inside of the machine. Spending just a few minutes a week will pay off in the long run with better quality and performance.

○ The left side Y-axis rail should also be wiped with a soft cloth.



After cleaning the rails and bearings, clean off the table and the rest of the inside of the machine. Spending just a few minutes a week will pay

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off in the long run with better quality and performance.

Crumb Tray Cleaning

The Crumb Tray is located below the Vector Cutting Table and collects small debris that falls through the table when vector cutting. Open the front access door of the laser and slide the crumb tray out of the front of the machine to keep it clean.

This photo shows the crumb tray partially removed. Dispose of all debris on the tray.



Always keep the table tray clean! Remove all debris that has fallen through the Vector Cutting Table. Debris and soot build up in the tray create a dangerous fire hazard over time.



Exhaust Cleaning

Cleaning the Vents

Clean the vents from the inside of the machine. It is best to use a flexible plastic or wire brush that can access the inside of the vent.

Clean the vents with a brush.



Cleaning the Down Draft Ports

In addition to the top vents, also clean the down draft ports.

The down-draft ports are located on the black strips at the back of the machine.



Cleaning the Rear Exhaust Port

Periodically remove the duct from the back of the machine and clean both exhaust ports. Inspect and clean your exhaust fan and duct work that it to which it is connected.



Laser Tube

The laser tube used in your system does have a maximum service life, and there is very little maintenance that is required. At some point in the life of the laser you will need to replace it for gas recharge, electrical repair or mechanical repair. Replacing laser tubes is common practice and Epilog has made the process of changing tubes extremely easy for users to perform with a minimum amount of effort. The laser tubes can be refurbished and are available on an exchange basis by contacting Epilog technical support.

Ensure that all of the laser cooling fans are properly working at all times. The fans keep the laser tube cool and prevent it from overheating. An overheated laser tube will produce erratic output and may fail completely.

If the laser system is in a dirty or dusty environment, make sure that the cooling fins on the laser tube are kept free of dust buildup. Use compressed air to blow the dust and debris off of the laser tube fins. Be sure that the system is unplugged before performing any maintenance on the machine!