Section 11: Engraving Machine Cleaning

In This Section

- Cleaning Important!
- Laser Tube

Cleaning - Important!

Fire Warning!

Through normal use your laser system can collect debris and soot that are potentially flammable. Keeping you laser system clean and the area around it clean are important parts of laser maintenance. Some materials are extremely flammable and can easily ignite and burst into open flame setting the machine afire. This open flame is very dangerous and has the potential to destroy not only the machine, but the building in which it is housed.

Please read the following warnings and recommendations and follow them closely at all times!

- ***NEVER*** let the laser system operate if it will be unattended.
- ***KEEP*** the area around the machine clean and free of clutter, combustible materials, explosives, or volatile solvents such as acetone, alcohol, or gasoline.
- ***ALWAYS*** keep a properly maintained and inspected fire extinguisher on hand. Epilog recommends a Halotron fire extinguisher or a multi-purpose dry chemical fire extinguisher. The Halotron extinguishers are more expensive than a dry chemical, but offer certain advantages should you ever need to use an extinguisher. The Halotron extinguisher discharges a clean, easily removable substance that is not harmful to the mechanics or wiring of the laser system. The dry chemical extinguisher discharges a sticky, corrosive powder that is very difficult to clean up.
- ***ALWAYS*** use air assist when vector cutting.

- ***BE CAREFUL!*** when vector cutting. Many materials have the potential to burst suddenly into flames – even materials that may be very familiar to the user. Always monitor the machine when it is operating.
- ***KEEP YOUR LASER SYSTEM CLEAN*** – A build up of cutting and engraving reside 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 grid to clean any small pieces that have fallen through the grid.

The single most important thing that you can do to keep your laser working as if it were new is to keep it clean! Five minutes once a day will keep the residue and debris from building up and causing problems. There is almost no maintenance required for your laser if you **KEEP IT CLEAN**!

To keep your system clean use a soft cloth and a mild solvent like Isopropyl alcohol to remove the smoke and vapor from the table, X-beam and anywhere else that collects dirt and debris.

Cleaning the optics requires special care. Please see the instructions on the following pages.

Cleaning the Auto Focus Plunger

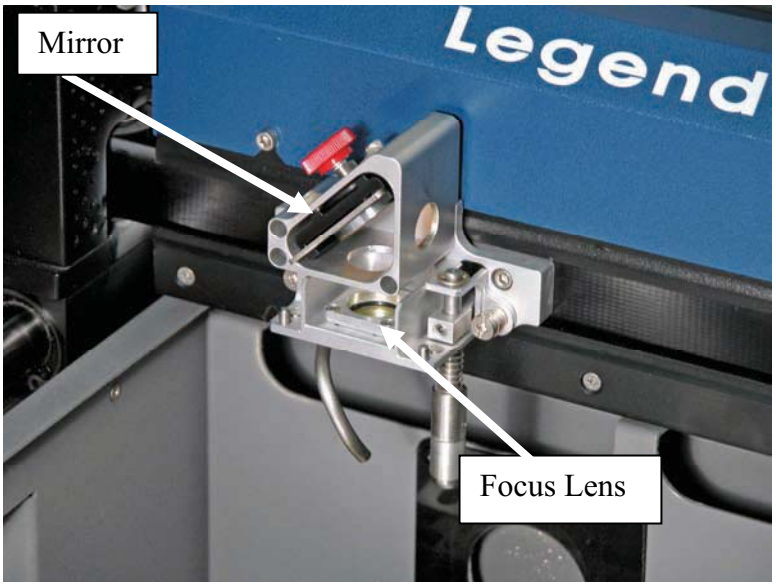
The Auto Focus plunger, as shown below, is mounted towards the back of the carriage that holds the focus lens. It is about a quarter inch in diameter, and about two inches long. The bottom shaft needs to be periodically cleaned for accurate focusing. Use a cotton rag and some mild household cleaner (Windex, 409 or isopropyl alcohol). Gently wipe the plunger until it is clean.

Auto Focus plunger.

Cleaning the Optics

About once a week, or if you notice the optics are dirty, 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 your optics may be damaged.

The two optical components most likely to require cleaning are the focus lens and the mirror directly above it. The mirror can easily be removed for cleaning by loosening the red thumbscrew. Once the mirror has been cleaned, slide the mirror mount back into its holder and tighten the thumbscrew. The thumbscrew only needs to be snug. It does not require a lot of pressure to stay securely in place.



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. Rubbing alcohol should be used only to remove fingerprints. If you run out of the cleaner supplied by Epilog, acetone can be used as a temporary measure, but should not be used for regular cleaning as it contains impurities, which can contaminate the optics. If you run out of optics cleaner, pure ethyl (grain) alcohol such as “Golden Grain" and "Everclear" are highly recommended because of their pure nature and because they are readily available.

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.

The other optics that may require cleaning are found on the right side of the X-beam and in the upper right corner of the cabinet. Use the same cleaning process of a cotton swab or lens cleaning paper to clean these two optics as necessary.

This optic is not removable but is easily accessible and can be cleaned in place.

This mirror should be cleaned in place, but is easily removed if necessary by loosening the red thumbscrew.

Cleaning the Tray Below the Vector Grid

Whenever you are vector cutting there is the potential for small pieces to fall through the vector grid and collect in the table tray. These small pieces present a very dangerous fire hazard. To clean your tray, remove the vector grid and clean out the table tray using a small brush or vacuum cleaner. Completely remove the debris in the bottom of the tray on a regular basis.

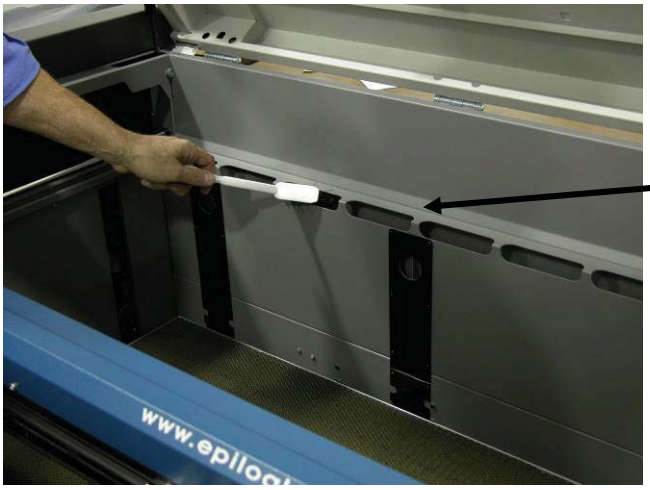
Always keep the table tray clean!

Remove all debris that has fallen through the vector grid.

Debris and soot build up in the table tray create a dangerous fire hazard!

Cleaning the Exhaust

Make sure the exhaust blower you are using receives proper maintenance. Periodically clean the exhaust blower and duct system to remove built-up debris. If you detect odor while engraving, or if the smoke in the cabinet is visible in the area of the lens carriage, inspect the exhaust system. Check for loose or broken pipe/hose connections, or obstructions. The photos below show where to clean the duct work of your machine. You should also occasionally check your exhaust blower and the duct work that is connected to it.



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 down draft ports too.

Periodically remove the duct from the back of the machine and clean both exhaust ports.

Inspect and clean your exhaust fan and the duct work connected to it.

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.

Insure 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!***

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Section 12: Engraving Machine Calibration / Maintenance

In This Section

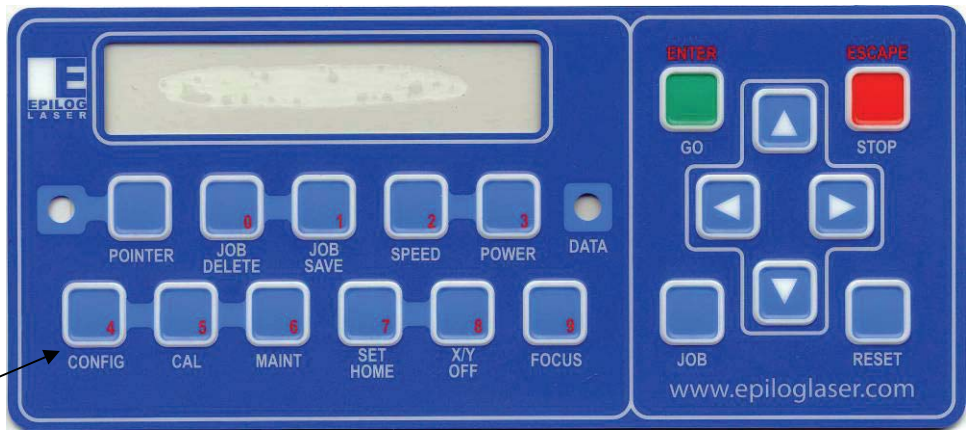
- Config (Configuration) key
- Cal (Calibration) key
- Maint (Maintenance) key

Your machine has many calibration settings that normally do not need to be changed. However, if these settings need to be viewed, the following section describes the procedure to access them through your machine's front control panel function keys. Additional information regarding function keys is located previously in the ***Using the Front Control Panel*** section of this manual.

CONFIG (Configuration) key

The Configuration menu contains the following menu items and available format or settings:

Serial Number	XXXXX
IP Address	XXX.XXX.XXX.XXX
Subnet Mask	XXX.XXX.XXX.XXX
Gateway	XXX.XXX.XXX.XXX
Load Flash Job	Yes/No
Auto Focus	Yes/No
Air Assist	Yes/No
Sys Unit	Inches/Millimeters
Auto Delete	Yes/No
Doublehead	Yes/No



CONFIG key

To access these settings, press the **CONFIG** key. After pressing the **CONFIG** key, use the Up or Down cursor keys to scroll to the desired field.

Once you have accessed the desired field, use the ⇦ Left and ⇨ Right cursor keys to make changes to that field.

Serial Number

This number is set at the factory and should never need to be changed.

IP Address:

Subnet Mask:

Gateway:

These three settings are described in ***Section, Installing the Print Driver*** of this manual.

Load Flash Job

This field works in conjunction with the Job Save feature and is functional after you have saved a job using the Job Save key. The Load Flash Job: key gives you two choices – Yes or No.

- Yes - Selecting Yes indicates that all saved jobs will be loaded into the keypad display when you boot up the system.
- No – Selecting NO indicates that none of the saved jobs will be displayed in the keypad when the system is booted up. If No is selected, all saved jobs will remain in memory but will not be accessible unless this option is set to Yes. When changing this option from No to Yes it is necessary to re-boot the machine for the saved jobs to be loaded into the display.

Auto Focus

A "Yes" in this field allows Auto Focus to be controlled from the Dashboard print driver. A "No" in this field prevents the use of Auto Focus from the print driver.

Air Assist

This field allows the user to select which operating modes Air Assist will be used for – Raster, Vector, Both, or None. The most common selection for this field is Vector. Most users only use Air Assist for Vector jobs and it is rarely used in Raster mode.

Sys Unit

This field allows the user to select Inches or Millimeters as the systems operating units. If the system is set to Millimeters, the units displayed on the LCD will display in millimeters.

Auto Delete

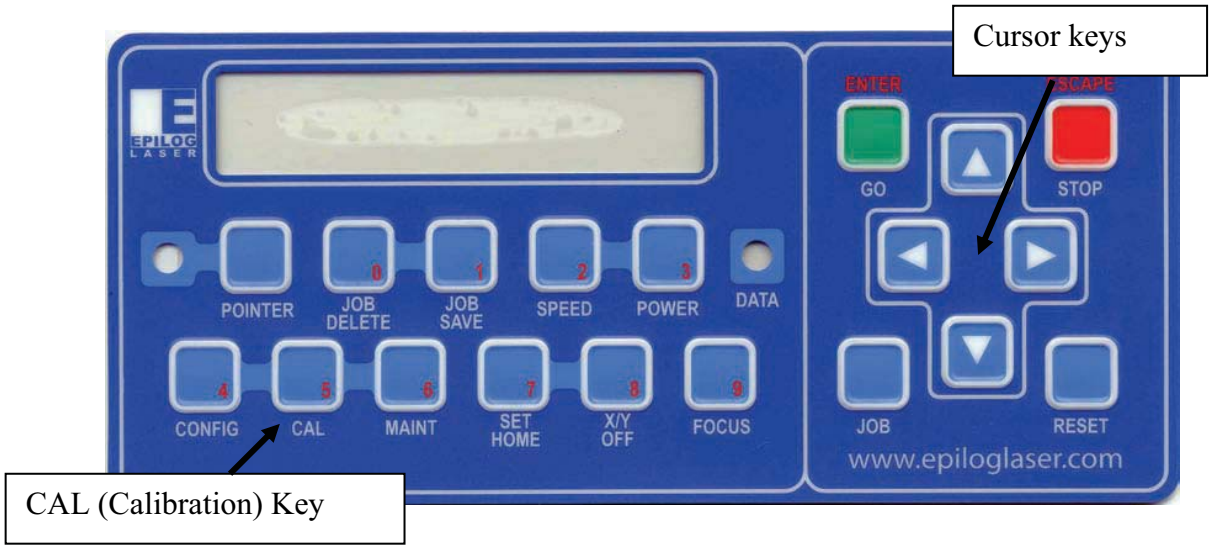
A "Yes" in this field will automatically delete a job when the job has finished engraving.

DoubleHead

A "Yes" in the DoubeHead field indicates that the double head is installed. A "Yes" setting lowers the maximum speed of the system in Raster mode. If the double head is not installed and this setting is set to "Yes" the maximum speed in single head mode will also be affected.

CAL (Calibration) key

There are a number of factory settings that normally only need to be set once at the factory to calibrate the system. To access the fields for calibration press the **CAL** key.



To access additional fields press the Down cursor key. Once the field is displayed its value can be adjusted by pressing either the right or left cursor keys. Pressing the **GO/ENTER** key saves the change. Pressing the **STOP/ESCAPE** key exits the Calibration menu without saving changes.

The numerical range of adjustment is also shown in the table following. Each single digit change is equal to .001 inch (0.025 mm) (except the Laser and Stamp Match values, which are in pixels). For example, changing the X-Home position from a value of -350 to -395 would move the X-Home position 0.045 inches (1.1 mm) to the right.

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The fields in the Calibration menu area as follows:

Calibration Setting ***Range***

X Home (X - Home Position) ***Range: -600 to 0***

Increasing this value will move X-Home to the left.

Y Home (Y - Home Position) ***Range: -600 to +200***

Increasing this value will move Y-Home up.

XR Home (X - Rotary Home Position) ***Range: -3000 to +600***

Increasing this value will move the X-Rotary home to the left.

YR Home (Y - Rotary Home Position) ***Range: -1200 to +1200***

Increasing this value will move the Y-Rotary Home up.

Laser Match ***Range: -20 to +20***

Stamp Match ***Range: -20 to +20***

Encoder Match X ***Range: -20 to +20***

Encoder Match Y ***Range: -60 to +60***

Laser T.M.: ***Range: 00 to +03***

Laser T.I.: ***Range: 00 to +03***

Focus Adj: (Auto Focus Adjustment) ***Range: -200 to +300***

Increasing this value will cause the table to stop at a point that is further away from the focus lens.

Section 12: Engraving Machine Calibration / Maintenance

Changing calibration settings:

- Press the **CAL** key to access the Calibration menu. Press the ⇧ Up or ⇩Down cursor keys to scroll to additional fields.
- Use the ⇦ Left or ⇨ Right cursor keys to adjust the value of the field you want to change.
- Once the field is changed press the **GO/ENTER** key to save the change. When you press the **GO/ENTER** key there will be a slight pause then the display will exit the Calibration mode. If you wish to save changes to more than one parameter, you will need to go back into the **CAL** mode for each change.
- If you just want to see what the setting is, but do not want to change it, press the **ESCAPE/STOP** key after you have viewed the calibration setting.

Maint (Maintenance) key

1. Restore Home Pos

This function restores the machine to its standard Home position in the upper left corner after having set a custom Home position using the Set Home key. Refer to Using the Front Control Panel for additional information on the Set Home key.

2. Align Laser

This function is mainly used as an easy means of aligning the laser when the system is being built at the factory. It can also be used to align a laser in the field.

3. Check Home

This maintenance function ensures the X and Y axes are active and responding to he electronics of the system.

4. Calib. X Encoder

This feature automatically calibrates the system so that Raster and Vector images are perfectly aligned to each other. This is a one time factory setting that will not normally be used outside of the factory.