

*(Original Instructions)*

# Operations Guide

**eCobalt IV™**

Class 4 Marking System

Manual 1.0 • March 2020



Laser Marking Technologies provides dependable, innovative ideas and solutions with unequaled product satisfaction. In this document you will find complete instructions.

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# 1 Introduction

This guide is intended for use by Plant Managers, Machine Operators and Maintenance Personnel

## 1.1 System Overview

System:	Details
Manufactured by	Laser Marking Technologies, LLC.
Model	eCobalt IV
Type	Pulsed Fiber
General Description	Laser marking machine equipped with a manual work piece stage and 163 fl lens on digital galvo head.
Functions	Permanent marking of laser friendly products including metals/ plastics

## 1.2 Authorized Use



This machines primary function and only authorized use is to safely mark products. This machine is not to be used as an experimental machine.

## 1.3 Points of Contact

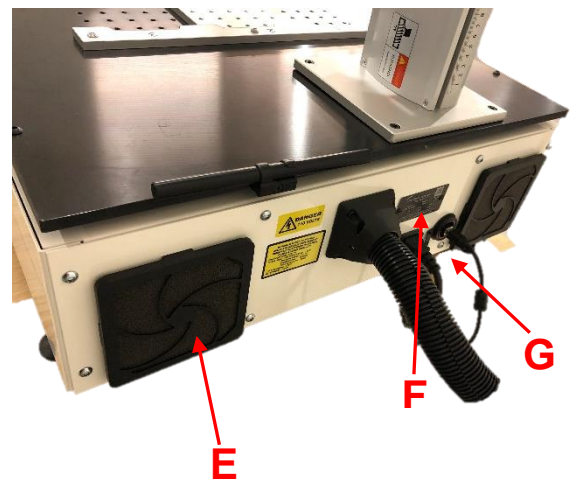
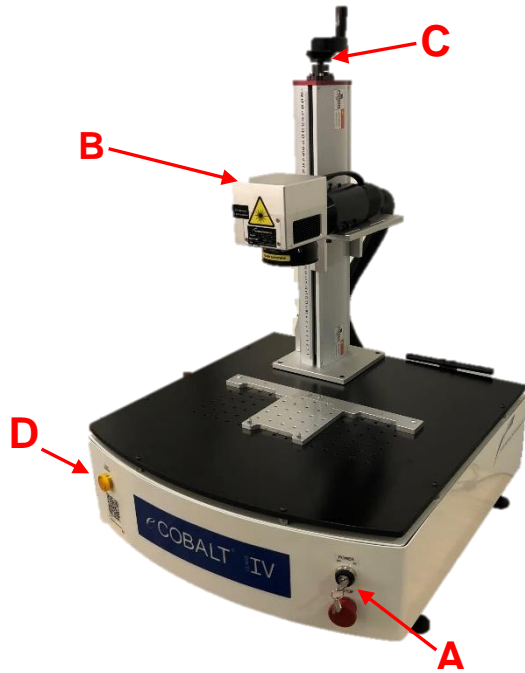
The following is a list of points of contact (POCs) that may be needed by the user for informational and troubleshooting purposes

Type	Email	Telephone
General information	<a href="mailto:info@lasermarktech.com">info@lasermarktech.com</a>	+1(866).799.0199
Sales	<a href="mailto:sales@lasermarktech.com">sales@lasermarktech.com</a>	+1(866).799.0199
Engineering	<a href="mailto:engineering@lasermarktech.com">engineering@lasermarktech.com</a>	+1(866).799.0199
Technical Support	<a href="mailto:techsupport@lasermarktech.com">techsupport@lasermarktech.com</a>	+1(866).799.0199
Service/ Parts	<a href="mailto:service@lasermarktech.com">service@lasermarktech.com</a>	+1(866).799.0199

## 2 System Overview

### 2.1 Description of Machine (View A)

The following is an introduction to the Cobalt® E Cobalt IV



- A. Power Key Switch/E-Stop
- B. Galvo Scan Head / Lens
- C. Manual Z-Axis
- D. Laser Emission Indicator
- E. Electrical panel fan/filter
- F. Serial Tag
- G. Foot pedal inlet/ USB inlet/Power inlet

## 2.2 Un-packaging instructions



Caution

This equipment is only authorized to be used in a facility with suitable lighting available.



Caution

This equipment is only authorized to be used in a facility where there is no slip or trip hazards present.



Caution

This equipment is only authorized to be used in a facility where proper training in ergonomics has been completed.



Caution

This equipment is only authorized to be used in a facility where proper forklift training has been completed.



Caution

Do not place liquids on any part of the machine or machine components.

Suitable Safety equipment to be worn while un-packaging



Safety gloves must be worn

1. To unload from truck, insert forklift forks into forklift pockets on the crate.

2. Remove Banding

3. Remove all clips as shown on the crate side

4. Remove crate top, then sides

5. Remove stretch film from machine. Do not use a knife of any type

6. Remove all components in cardboard packaging located on top Machine within crate

7. Locate Computer in cardboard packaging

8. Turn on computer to watch the Start Up Video on the desktop

9. Read Safety Manual before continuing in the setup process



Danger of falling objects

Suitable securing and bracing of the table surface using minimum of 300lb capacity holding units must take place before placing the machine atop to avoid the machine from causing harm. Suitable tested and certified lifting equipment must be used at all times.

10. Place the Machine onto a secure bench

## 2.3 Machine requirements

1. Voltage and Amperage is machine specific, and requirements can be found at the rear of the machine on the Serial Tag at the rear of the machine near the power inlet
2. Customer must supply an electrical receptacle with 110 vac (or 220 vac dependent upon the specified requirement) with a ground and 15 amp service

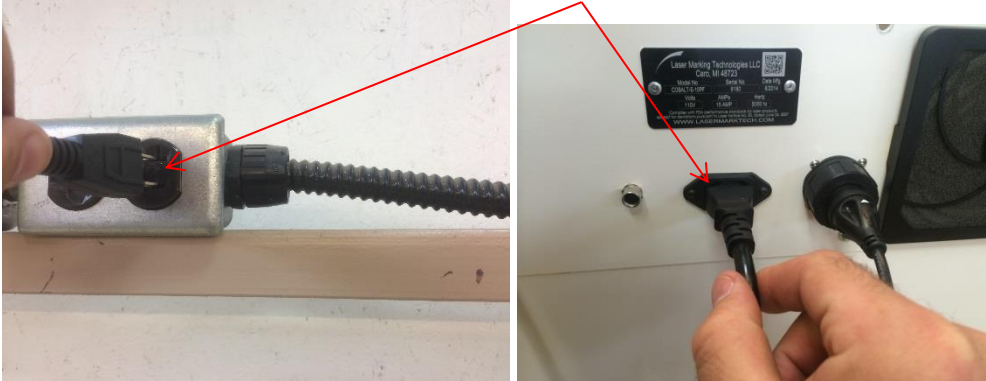


## 2.4 Initial set-up instructions



Be aware of risk of electrical shock while performing the following actions, must take proper precautions.

1. Plug main control electrical cabinet power cord into a customer supplied receptacle with a ground



2. Remove the lens cap



Caution

**Fume Extraction Requirements: Minimum recommended airflow/static pressure - 223cfm/96mbar at machine.**

**If evidence of a lack of routine maintenance is shown to have had a part in a disruption of machine operation, such as inadequate fume extraction during operation, the machine's warranty will be voided. Please ensure a maintenance schedule is created and applied immediately after receiving training on the machine.**

3. Plug in PC, and install USB cable between CPU and Machine

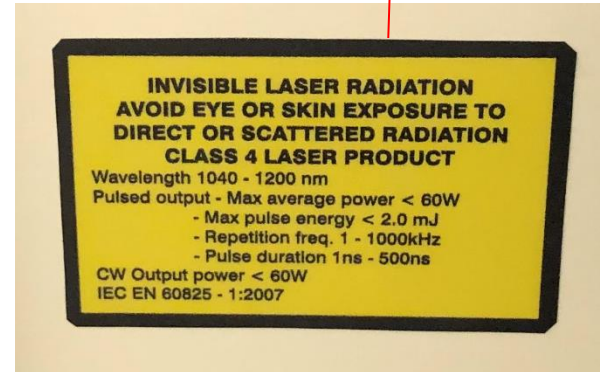
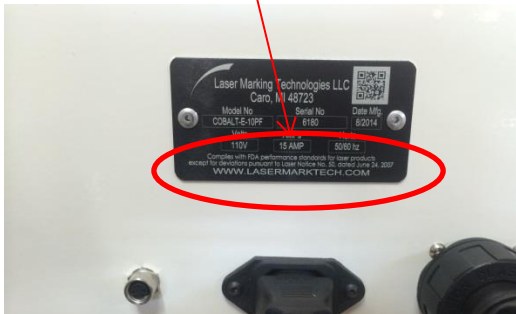




4. Ensure proper PPE is utilized. (Consult your company's laser safety officer).
5. Ensure all warning labels and serial tag are in position and readable as described below.



"Complies with FDA performance standards for laser products except deviations pursuant to Laser Notice No. 50 dated June 24, 2007"



Emission capable when "ON"



!!! THE FIBER CABLE AND OPTICS ARE MADE OF GLASS AND ARE EXTREMELY FRAGILE - HANDLE WITH CARE, AND DO NOT EXCEED A 4" BEND RADIUS OR STRESS AT ANY TIME WITH THE FIBER DELIVERY CABLE CONTAINED WITHIN THE LOOM CONNECTING THE MARKING HEAD TO THE CONTROL UNIT !!!



## 2.5 Machine start-up instructions



- Depression of the E-stop at any time will disconnect the power supply to the laser and control components, ceasing operation and removing the possibility of harm caused by the laser.

1. Energize main control electrical cabinet by rotating the red handle of the E-Stop located on front of main control electrical cabinet clockwise (the e-stop will no longer be depressed), and then turn the Main Power Key Switch clockwise



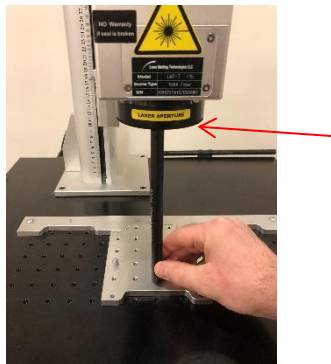
2. Turn on PC
3. Ensure Lens Cap is off, and all labels are present as described in the setup instruction above

## 2.6 Operating Instructions



- This machine is not intended for use other than described.
- This machine can mark material such as steel, aluminum, ceramic, carbide, rubber, titanium, brass, copper and laser friendly plastics.
- Do not operate this equipment until you are properly trained to use the equipment.
- This machine is below 70dba and does not require any hearing protection.

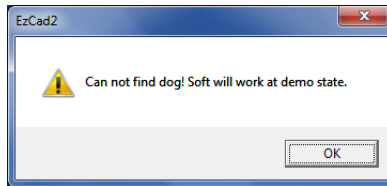
1. Ensure the machine is on and USB cable is plugged in
2. Place the part to be marked inside of the marking area (110mm square beneath the scan head is standard). A sample part and program has been provided with the corresponding serial # of the machine for an example marking
3. Use the supplied focal stick with the machine's corresponding serial # to set the focal distance for the size part to mark. Place the focal stick between the marking surface of the part and the bottom rim of the lens, not the glass surface. Use the control knob on the top of the Z-Axis to adjust the position of part in the Z plane



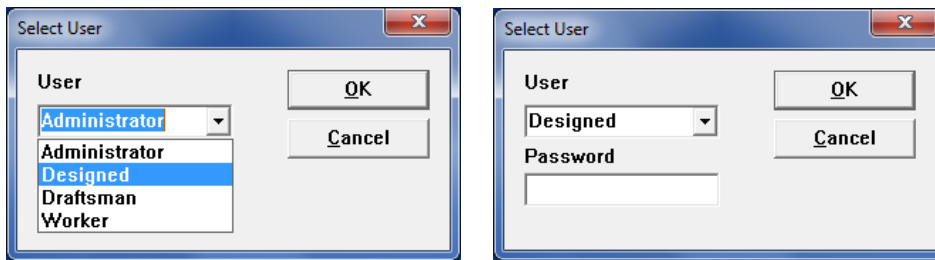
4. On the desktop of the computer, double click the "LaserMark" software icon



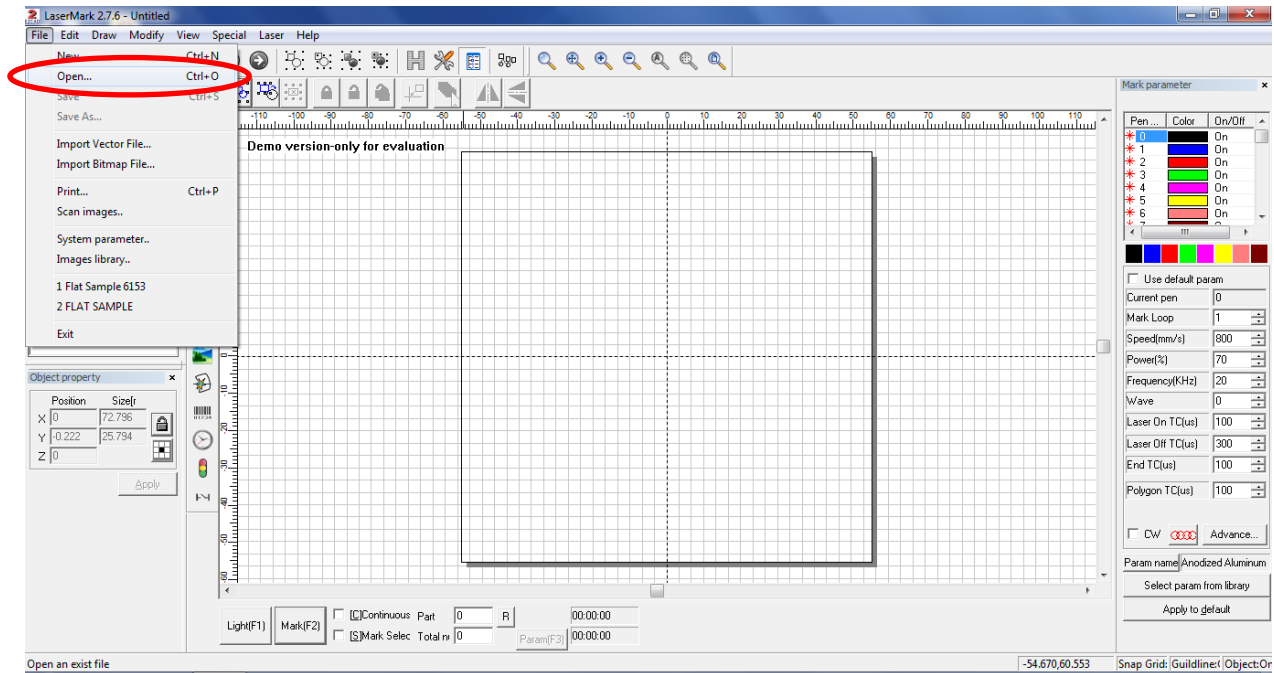
5. If an error appears, the machine is most likely turned off, or the usb is unplugged



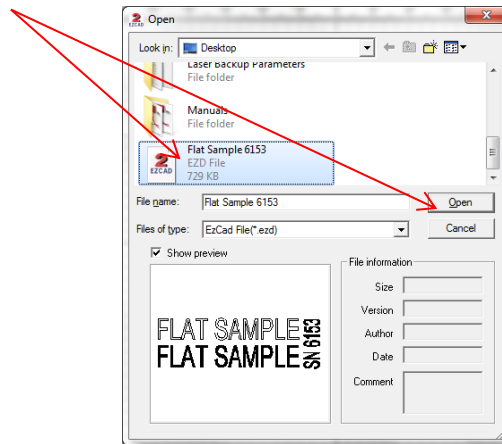
6. Enter the program in the “Designed” level of access (this currently requires no password), click “ok”



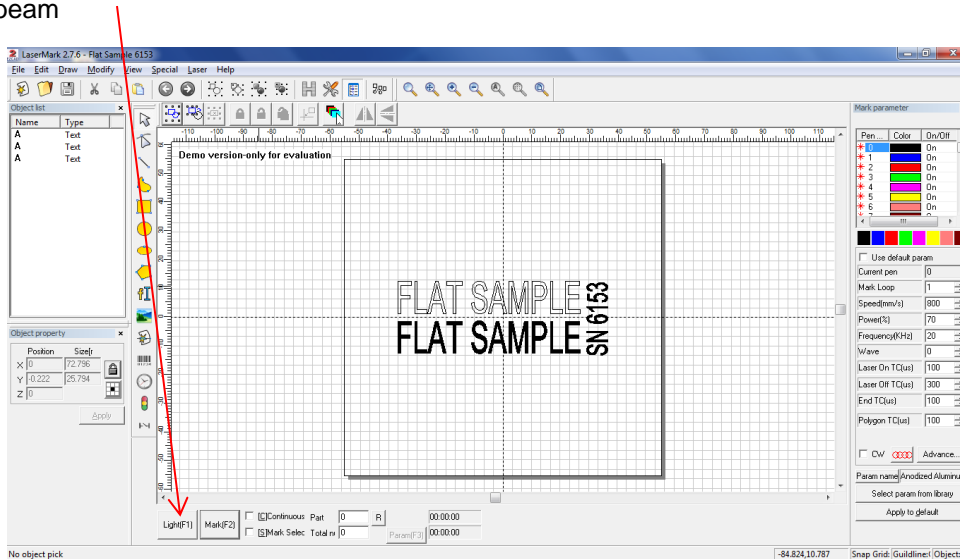
7. Open a file to mark by clicking “file”, then “open



8. Select the desired file, and then click “open”



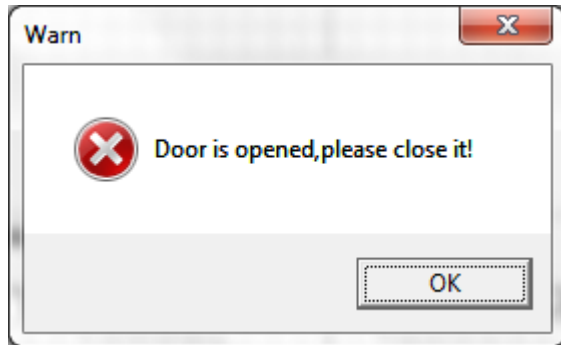
9. Once open, click the “light” button or hit “F1” on the keyboard to preview the mark using the red beam



10. The screen will display that you are “lighting”, move the part, or adjust the position of the file using the arrow key to achieve proper placement of the marking. Hit the “esc” key or click “Stop” when finished



- 11. An interlock is provided to incorporate into a safety enclosure. An error will be produced if the interlock is opened at any time the mark is being commanded and emission will cease.

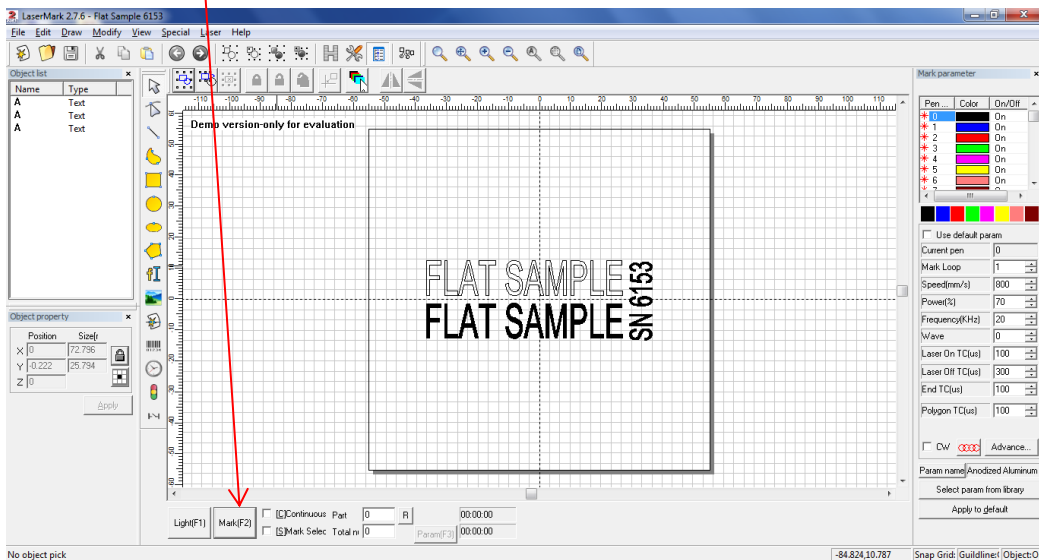


- 12. When the machine is powered on and capable of laser emission the light will be on.



- 13. Ensure proper PPE is utilized. (Consult your company's laser safety officer).

- 14. Click "Mark" or hit the "F2" key on the key board to start the marking



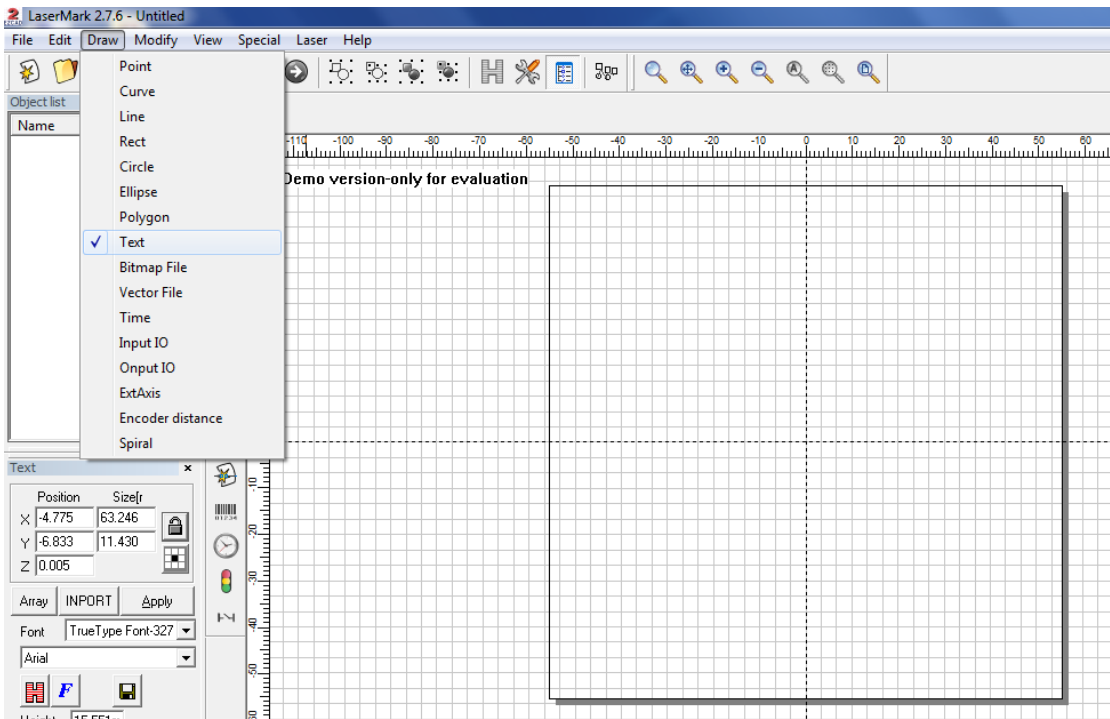
15. The marking can be viewed using PPE, and the text “Marking” will be displayed through the duration of the mark. When complete, the “marking” prompt will be gone



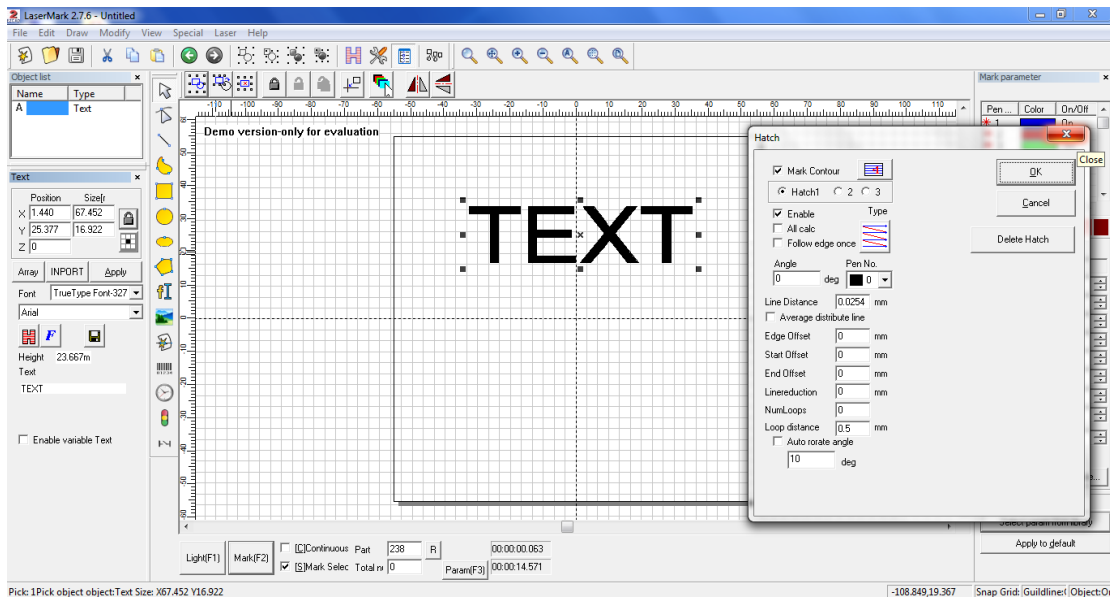
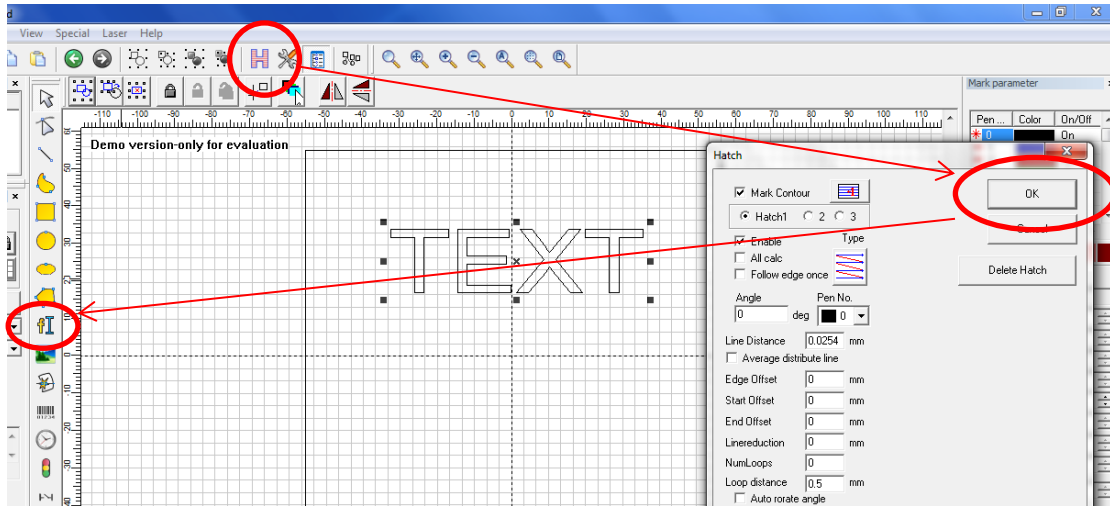
Dependent upon the material and duration of the marking, the marking surface or part may be hot—use caution in handling the processed parts.



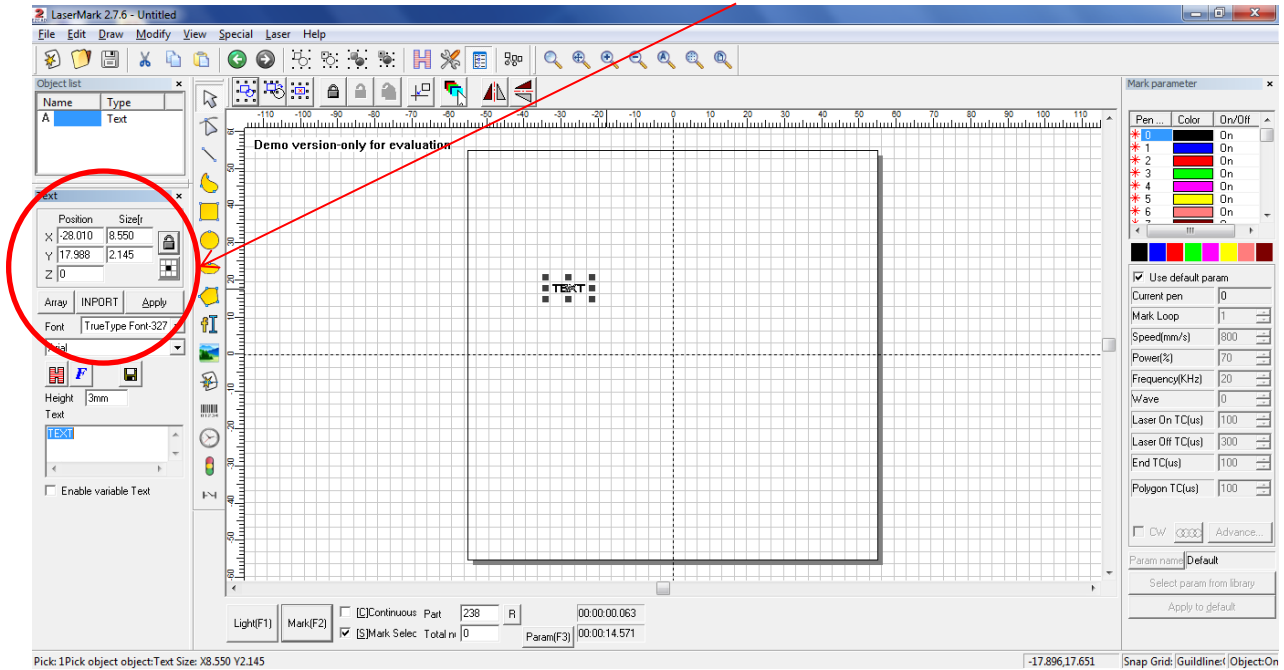
16. To create a new text, click “draw”, then text, then place the cursor anywhere in the marking area and left click the mouse



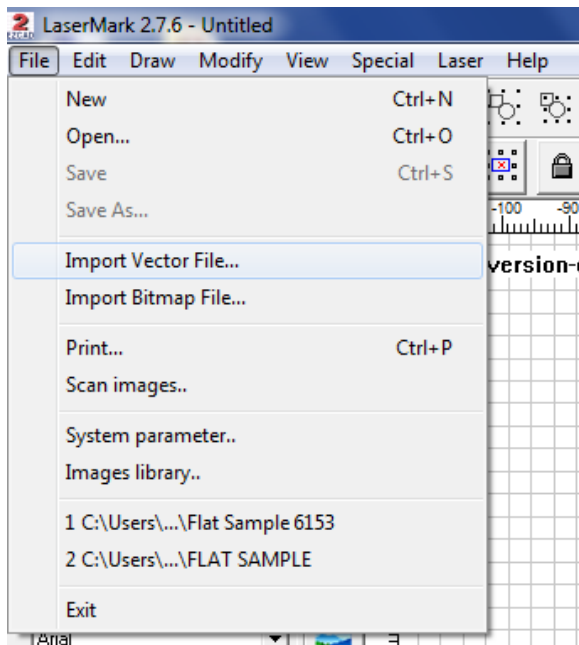
17. To “hatch” or create a fill in a text or any vector image- select the image, then click the “H” button to bring up the menu, once settings are complete, click ok to apply the change (click apply after making any changes to the object’s attributes)



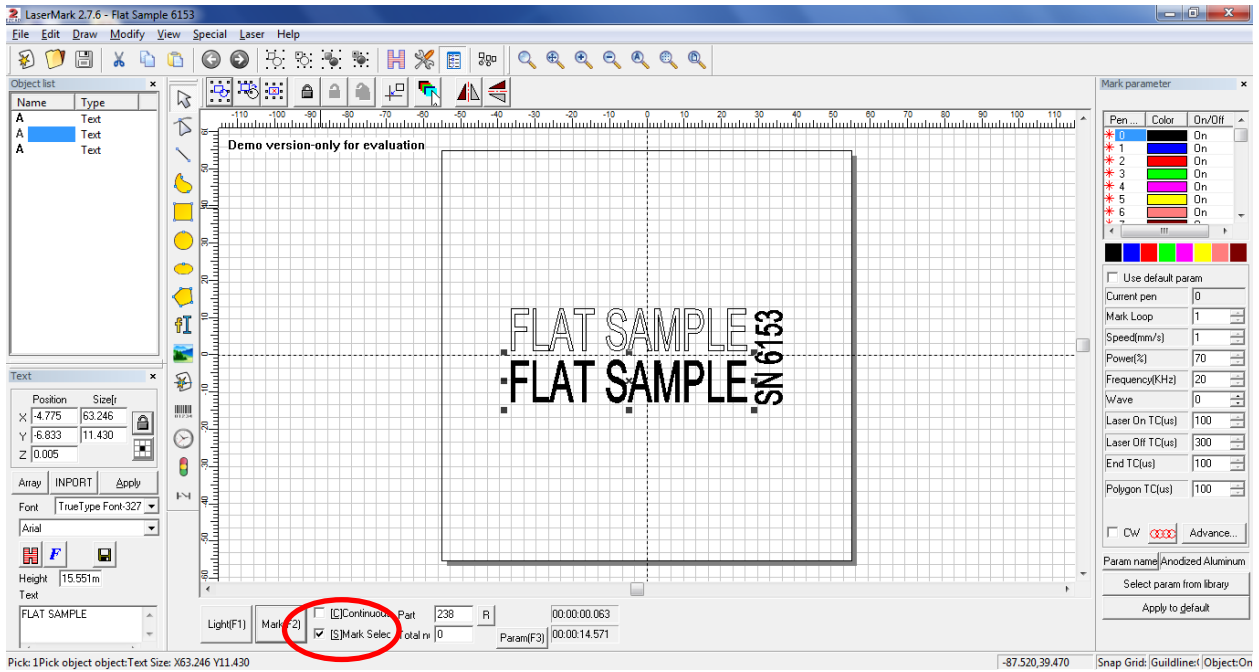
18. To modify text's content- change the content within the "Text" box, also apply the desired font style and sizing within this area. Click "Apply" when finished



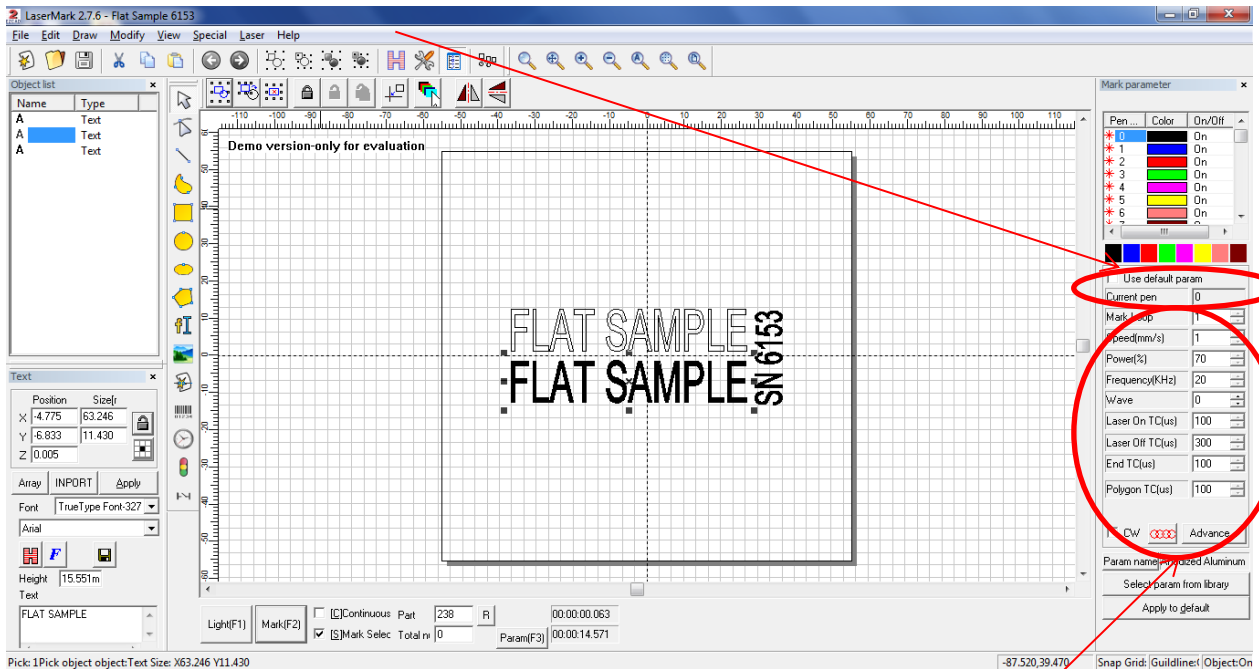
19. To import a vector file for marking - click "File", then click "Import vector file", and choose the desired file of the available Vector file types



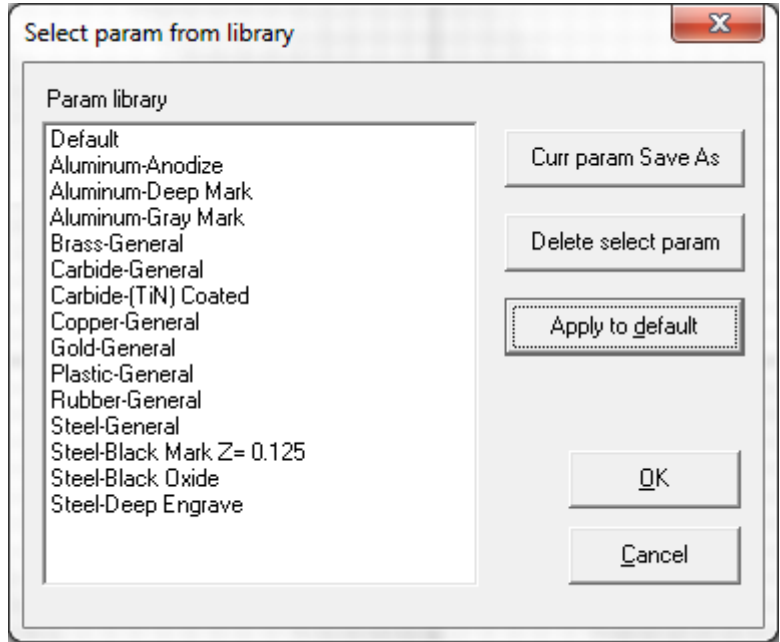
20. To only mark or preview a selected portion of the marking file, place a checkmark in the “Mark selected” box near the Mark Button and select the desired portion of the file, then click f1 or f2 to preview or mark that selection



21. To change the marking parameters, modify the values on the right hand side of the marking software. The horizontal color selection bar can apply a different set of parameters to a marking object by changing the color of it on the screen (so you can visually reference a different parameter setting by looking at the screen, pen assignments have a # and a color—0 through 7 are represented on this bar). Simply click the object, then click the color on the horizontal bar to change its pen assignment



22. General Starting Parameters have been created for this marking system and can be accessed by clicking the “Select Param from Library” Button and selecting the desired material (these are “starting point” parameters, and may need the values modified for specific process specifications). Select the desired material, then click “ok”. Parameters can also be saved for later use in this menu



23. For detailed descriptions of the software’s capabilities and layout, please refer to the “LaserMark Software Manual” provided on the computer’s Desktop and Master Cd.

## 2.7 Shut Down Instructions



Never leave a machine unattended in the process of marking.

1. Save current work, and close out of the software by clicking the red “x” in the top right-hand corner of the software.
2. Turn the key switch counter clockwise to turn power off to the machine. (key is removable in the “off” position)



## 3 FAQ / Troubleshooting



**We've answered some of the most frequently asked questions** we have received. If there's anything else you want to know, or for additional explanation, please [submit a question](#).

Click link below to be connected to our FAQ page. Then type "1111" into the password section.

<http://lasermarktech.com/customer-access-area>

## 4 Preventative Maintenance

Tasks can generally be grouped into daily, weekly and monthly schedules.

Depending on the circumstances, additional tasks may need to be implemented, and some tasks may occur more or less often or not at all.



**All maintenance should be performed using suitable lockout – tag out procedure and equipment**

**Fume Extraction Requirements: Minimum recommended airflow/static pressure - 223cfm/96mbar at machine.**



**If evidence of a lack of routine maintenance is shown to have had a part in a disruption of machine operation, such as inadequate fume extraction during operation, the machine's warranty will be voided. Please ensure a maintenance schedule is created and applied immediately after receiving training on the machine.**

### 4.1 Daily Tasks

Perform these tasks on a daily basis:

1. Remove any dirt or debris on fixture or in area.
2. Inspect the lens surface for dust or debris—remove debris with gas duster
3. Ensure Fume extraction nozzles are in a suitable position for maximum removal

### 4.2 Weekly Tasks

Perform these tasks on a weekly basis:

1. Check fume extraction system for adequate flow—replace/ clean filters as necessary or recommended by the manufacturer.
2. Inspect lens for any film caused by the process or surrounding environment—clean as necessary (without removing the lens) with >91% Isopropyl alcohol or equivalent and lint-free laser optics cleaning tissues

### 4.3 Monthly Tasks

Perform these tasks on a monthly basis:

1. Check power cord for damage or wear—replace as necessary
2. Check seating of USB connections—clean connection areas as necessary, replace cord as necessary.
3. Ensure proper motion of the Z-Axis—clean/grease as necessary
4. Check/Clean electrical panel vents

5. Inspect Laser fans for dust - Clean with compressed gas duster with power off.
6. Inspect Work area for dust - Clean with compressed gas duster or a damp cloth with power off.

## 5 Transportation Instructions



This equipment is only authorized to be moved by personnel that have been properly trained in forklift use.

### 5.1 Packaging the Machine

1. Place back into the supplied crate, using the supplied foam blocks.
2. Place sides back onto crate, install clips along bottom and sides
3. Place computer, in its box, on top of the machine (between all foam spacers) --also box foot pedal, and loose components to place next to the computer box
4. Check to ensure the keys, focal stick, machine power cord, computer, computer power supply and cord, sample tag, foot pedal, and master cd are all included in the crate
5. Place the top on the crate, and replace the clips along the top of the crate.
6. Band the crate in each direction, and place labels for tipping, impact, and do-not-stack

## 6 Spare parts list

This is a list of spare parts recommend to be kept on hand to maintain proper operation of this machine.

### eCobalt IV

<b>QTY</b>	<b>DESCRIPTION</b>	<b>PART #</b>
1	Scan head	LMT-SH-GO7
1	Scan Head power supply	LMT-SH-PS
1	FL 163 Lens	LMT- 163FL
1	FL 163 Cover Lens	LMT-CL-163
1	Laser Safety Glasses	LMT-LSG
1	RIGHT ANGLE ACTUATOR KEY	HS9Z-A62
1	Focal Stick	LMT-FS
1	6FT Computer Power Cord 16/3 SJTW 110v to iec-320 C-13 connector	2724.072.989
1	USB Control Board – Fiber Lite	LMC-Fiber
1	IDEC Safety Switch	HS6B-03B03
1	24VDC power supply	S-320-24
1	5VDC 3amp power supply	RS-15-5 or RS-25-5
1	Quick Start Foot Pedal	7717K14
1	Key switch	HW4K-2BF10
1	USB cable	ECUSBAB-2M
1	E-Stop switch	GCX1131



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**LASER MARKING PARTNER**

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**TOLL FREE (866)-799-0199**  
**Ask for technical support.**