

UNIVERSAL LASER SYSTEMS INC.

XL Series Laser Engraving and Cutting System Pre-Installation Guide

**Laser System Manufactured by:
Universal Laser Systems, Inc.**

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The laser system MUST be installed in an adequate facility and configured properly in order to validate its warranty. Intentional non-compliance will void the laser systems warranty.

Operating Environment

Follow these guidelines to ensure a proper operating environment for the laser system. Operating the laser system outside of these guidelines can seriously damage the laser system and damages from this type of abuse **WILL NOT** be covered under warranty. Although conforming to these guidelines will greatly reduce the chance of a problem occurring, it does not guarantee it. **It is your responsibility to provide a proper operating environment.**

- Ambient room temperature **MUST** be between 58 and 85 degrees F (15 and 30 degrees C). If transporting the laser system from a very cold or very hot environment to the proper operating environment, the laser system must be allowed time to adjust to the ambient temperature. To do this, turn on the laser system, and let the system idle for 15 minutes before processing materials. This will allow the ambient temperature to circulate through the laser system to either warm it up or cool it off.
- Ambient room dew point temperatures **MUST** be less than 50 degrees F (10 degrees C).
- We recommend that the laser system be installed in an "office type", "computer" or "photocopier" friendly environment. Dusty or dirty air environments can damage the laser system. Keep the laser system isolated from any type of sandblasting, sanding, or any other machinery that produces airborne particles.
- Avoid small, enclosed, non-ventilated areas. Some materials, after laser engraving or cutting, continue emitting fumes for several minutes after processing. Having these materials present in a confined, unventilated room can contaminate the room.
- We recommended installing the laser system on a concrete floor. The floor underneath the laser system must be flat within 1/4 inch from wheel to wheel. An uneven surface will cause a twisting of the main enclosure. This can cause motion system binding as well as engraving problems. If the floor does not meet specification, you will need to adjust the casters of the laser system when you receive it. Leveling instructions are included with the system.

Specifications:

	XL-92000	XL-12000
Laser Power	See Laser Options	See Laser Options
Field Size	36"x24" (41.5"x29.5" max part)	48"x24" (53.5"x29.5" max part)
Z axis	8.5" motorized	8.5" motorized
Overall dimensions	56"w x 48"d x 48"t	68"w x 48"d x 48"t
Weight	500 lbs (without laser)	600 lbs (without laser)
Max Speed	100 in/sec 70 in/sec w/traveling exhaust	100 in/sec 70 in/sec w/traveling exhaust
Max Resolution	1016 dpi	1016 dpi
Computer interface	Ethernet	
File storage	40 Gb hard drive built in	
Controls	Active Matrix color display with job preview and navigation keypad	
Power	See Laser Options	See Laser Options
Cooling	Air Cooled	
Z-Axis load	60 lbs	60 lbs
Software compatibility	Windows XP only	

Electrical Requirements

Make sure that your electrical outlet is capable of providing the proper voltage, frequency and amperage that the laser system needs.

Laser Configurations:

	MP120 and MP120 SuperSpeed	HP210	HP300
Laser Power	Up to 120 watts (2 x 60 watts)	Up to 210 watts (150 watts + 60 watts)	300 watts (2 x 150 watts)
Laser Weights	UL 25/30 (20 lb) UL-35/40 (23 lb) UL-45/50/60 (26 lb)	UL 25/30 (20 lb) UL-35/40 (23 lb) UL-45/50/60 (26 lb) UL-150 (90 lb.)	180 lb.
Machine Power Requirements	15 amps @ 220V	25 amps @220V	20 Amps @220V 3Ø

A Hubbell 50 Amp Twist-Lock Plug and Connector will be provided with all XL Series systems. We do not provide any type electrical cord.

VOLTAGE ABOVE 230VAC SHOULD NOT BE USED BECAUSE IT MAY CAUSE SERIOUS DAMAGE TO THE LASER SYSTEM. DAMAGES FROM AN INADEQUATE OR INAPPROPRIATE POWER SOURCE ARE NOT COVERED UNDER WARRANTY.

Noisy or unstable electricity as well as voltage spikes can cause interference and possible damage to the electronics of the laser system. Connect the laser system to a dedicated electrical line if this is a problem in your building.



Never remove the ground lead to the electrical cord and plug the system into a non-grounded outlet. This is very dangerous and can lead to a severe, if not fatal, electrical shock. Always plug the system into a 3 prong grounded outlet.

If electrical power fluctuations, brown outs, or constant power outages are a problem in your area, an electrical line stabilizer, UPS (Uninterruptible Power Supply), or backup generator might be required. If installing any of these devices, make sure that they meet the electrical requirements of the laser system.

If there is any type of electrical problem present, please contact a locally licensed electrical contractor to correct the problem. If an incorrect electrical supply, voltage spike or surges damage the laser system, the damages **WILL NOT** be covered under warranty. **It is your responsibility to provide a suitable electrical supply.**

Exhaust Requirements

To properly exhaust fumes and smoke from the laser engraving system during operation, it is necessary for you to provide a proper exhaust system

Two 4" connections on the back of the machine requiring a blower capable of 700 CFM Air flow at a static pressure of 6 inches of water (2 H.P. radial blade exhaust blower recommended).



Never operate the laser engraving system without a properly installed and operating exhaust system. Some materials when cut or engraved can produce fumes that are hazardous in concentrated amounts.

The exhaust blower **MUST** be mounted on the **OUTSIDE** of the building either on the roof or on a cement pad next to the building possibly mounted on vibration dampers. Maximum tubing length should not exceed 100 feet.

Rigid tubing should be used for 90% of the distance traveled. The tubing should be smooth walled and have as few 90 degree bends as possible. Two 45 degree bends have better airflow than one 90-degree bend. Use tubing with a diameter that matches the blower unit (usually 6 inches/1524 mm) and use a 6 inch (1524 mm) to 4 inch (1016 mm) reducer to couple the tubing down to 4 inches (1016 mm) to within a few feet from the laser system. Do not connect the rigid tubing directly to the laser system. Use a short piece of industrial grade, wire reinforced rubber tubing to connect the end of the gate, or rigid tubing, to the laser system. This will provide mobility and will dampen blower vibrations. Use only a few feet because it's spiral construction reduces airflow. Install a hose clamp on both ends of the hose to prevent leaks and to prevent the hose from slipping off. Finally, have the blower wired to a wall switch in the same room for easy ON/OFF control.

Also consider installing a gate to control airflow and to close off the exhaust from the outside environment when the laser is not in use. This is especially useful in colder climates where it can be damaging to the laser system to have cold air coming into it from the outside.

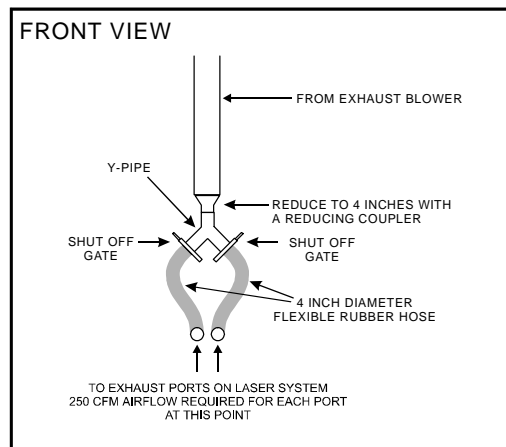
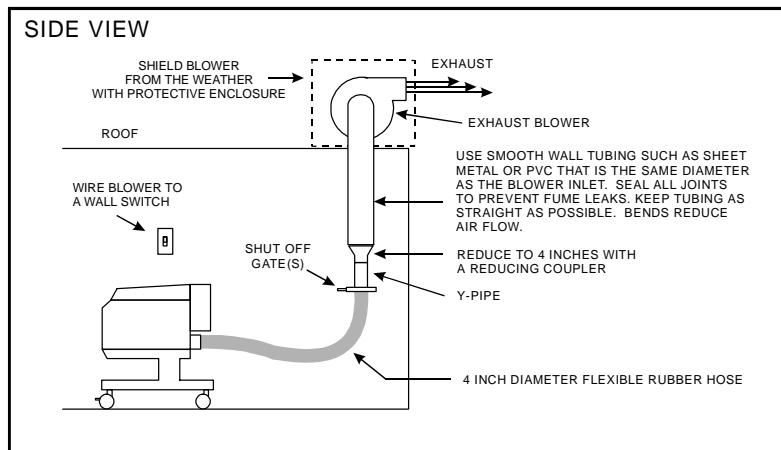
In order to meet the laser system's CFM requirements, a high-pressure, high static pressure rated, exhaust blower must be installed. This type of blower has self-cleaning blades and can maintain airflow even though restrictions are introduced. Length of exhaust pipe, exhaust pipe diameter, number of 90-degree angles, and other restrictions must be calculated when determining the correct exhaust blower unit. Installing an incorrect or undersized blower is not only unsafe, but it can also lead to premature and excessive wear and tear to the laser system. Grainger Industrial Supply Company (www.grainger.com) carries blowers that met these requirements and are available worldwide.

DO NOT install forward incline, backward incline, in-line, or ventilator fans because these types of air handlers are inadequate and inappropriate for this type of installation. If your contractor has any questions concerning blower specifications or exhaust system requirements, please contact our Service Department directly before installation.

The following diagram shows a typical exhaust system layout. Use this as a guideline to proper exhaust system installation. Although these diagrams just serve as an example, we recommend installation of the exhaust system by a licensed contractor to meet safety and local code requirements as well as being able to calculate the correct size blower required for your particular installation.

The Y-Pipe is necessary for XL Series Systems.

ROOF MOUNT INSTALLATION EXAMPLE





Do not confine the back of the machine by surrounding it with furniture, shelving, backing it into a corner, etc. The backside of the laser system must be allowed to “Breathe”; otherwise it can overheat the power supply and/or the CPU module. Overheating may cause serious and very costly damage to the laser system.

Problem Prevention

The following are things that you **MUST** do:

1. **Never connect the laser system through a manual switch type A/B switch box.** If connecting an additional laser system or other printer to the same computer, we recommend the installation of an additional parallel port into the computer. Using a switchbox can create electrical noise that can cause an engraving problem or can damage the laser system and/or the computer’s electronics.

Computer Requirements

Minimum Computer Requirement

- Windows XP Home or Professional Edition computer. Macintosh computers are not compatible
- 1.5GHz processor with 256 MB RAM and a 40 GB hard drive
- CDROM drive
- Monitor (minimum 800 x 600 resolution)
- Mouse or other pointing device
- Ethernet port 10/100 Ethernet connection
- Ethernet hub or Ethernet switch (see below)

If the external computer is part of a network, the Laser System’s Ethernet cable can be connected directly to the network. However, in the case of a stand-alone external computer, a hub or switch is required between the computer and the Laser System.

Recommended Accessories or Upgrades

- Faster processor (2.0 GHz or higher) with 512 MB RAM or greater
- Larger hard drive (80 GB or greater)
- Large monitor (17” or larger)
- 600 DPI scanner (optical)
- Writeable CDROM drive
- Internet connection and email address

Remember, the laser system is an output device just like a printer is. The faster you can create graphics and manipulate your software, the faster you can download to the laser system to keep it producing.

Air Assist

All XL Series Systems ship plumbed for Air Assist.

- 50 PSIG min and 60 PSIG max regulated pressure (must be adjustable). All air supplied to system must be filtered through a Particulate Filter along with a Desiccant Chamber to prevent moisture and debris from entering internal air tubing. Airflow capacity should meet a 2.5 SCFM @ 50 PSIG minimum.

Software Recommendation

The following is a list of recommended software programs.

- Graphics Software - CorelDRAW version 12
- Although other graphical software may work, Corel 12 has been thoroughly tested with XL Series system.

When a software company updates their version of their programs, it can sometimes cause conflicts with our printer driver. Our programmers constantly test new software programs and updated versions for compatibility. We will update our printer driver to address issues that we have control of. For bugs or problems with your software not related to the laser system, please contact the software manufacturer.

Font Requirements

The laser system requires the use of **TRUE TYPE FONTS ONLY**. The laser system **IS NOT** Postscript compatible. **DO NOT** use Postscript fonts.

Software Setup (CorelDraw 12)

There are many software programs that you can purchase off-the-shelf that will work with the laser system. **We recommend the use of CorelDRAW 12 with Service Pack 1.** Other software programs might not be able to access all of the features of the laser system. Whichever program you choose, it must be set up to work with the laser system otherwise **unexpected results may occur.**

NOTE: The XL Series Printer Driver must be loaded before continuing. Your laser system must be connected to the PC using a network system or network hub by Ethernet cabling. The ULS Printer driver should be set as the default driver.

CorelDraw 12

1. Make sure that you have installed all Service Releases and software patches from Microsoft. If you are reading this document from the ULS Windows Printer Driver CD, as a service to you, you can find the file on this CD. There is an update available for Windows XP included in the ULS Windows Printer Driver CD, but it is not mandatory that you install it. For the latest releases, check Microsoft's website, www.microsoft.com. Please contact Microsoft if you have any questions regarding these upgrades. ULS is not responsible for any problems as a result from the usage of these patches.

2. If you have not already done so, install CorelDraw on your computer, but do not open it yet.
3. It is important that your version of CorelDraw is updated with the latest patches and service releases. For the latest patches and updates go to CorelDraw's website, www.corel.com. As of the date of this publication there are no updates available for CorelDraw 12. Be sure to check for any updates from time to time to keep your version up to speed. Please contact CorelDraw if you have any questions regarding these upgrades. ULS is not responsible for any problems as a result from the usage of these patches.
4. The ULS Windows Printer Driver must be loaded before continuing. Please refer to the Computerized Controls manual on how to install the driver. If you have already installed the printer driver, you will need to re-insert the ULS Printer Driver Disk back into your CD drive at this time.
5. Using Windows Explorer, locate the file named "ULS.CPL" and "ULS.PAL" on the ULS Windows Printer Driver CD, and copy these files over to the C:\Program Files\Corel\Corel Graphics 12\Languages\EN\Custom Data\Palettes folder. **Note: ULS.CPL may not show up with a .CPL file extension. It may be listed as ULS with "Control panel extension" shown as a detail.**
6. While still in Explorer, locate a file named "corelapp.ini" located in the C:\Program Files\Corel\Graphics12\Config folder. Double-click on the file it will open up in Notepad. Scroll down past the semi-colons to the [Config] header. Then scroll down 22 lines to the line that reads "Fontrasterizer=1". Change the 1 to a 0 (this is a zero, not an o). Save this file and then close Notepad.
7. Open CorelDraw and start a new graphic.
8. In the main menu at the top of the screen, click on "Window", then "Color Palettes", and then click on "None". Once again click on "Window", then "Color Palettes", and then click on "Open Palette". After the "Open Palette" pop-up box appears, double-click on "ULS.CPL". The color palette will now appear on the right side of the screen. **Note: You can use either the ULS.CPL palette or the ULS.PAL palette, however, to use the ULS.PAL palette you must first select the PAL file type in the open palette screen.**
9. On the property bar, click on the landscape orientation (the sideways rectangle). If you would like the drawing units in metric, choose millimeters from the drop down list. Now type in the page width and height that matches your laser platform.
10. We now need to adjust the vertical ruler, on the left side of the screen, to match the rulers in the laser system. To do this, we need to adjust the ruler's vertical origin. Double-click directly on the vertical (side) ruler. The "Options" dialog box will appear. In the vertical origin box, type in the same height value as you did when you set up the page height in the previous step. For example, 12 inches for an M-300 machine. If you would like the scale to be displayed in tenths, choose "10 per Tick" in the "Tick Division" drop-down list box.
11. While still in the "Options" dialog box, double-click on "Global" to expand the list. Double-click on "Printing" to expand the list. Now click on "Driver Compatibility". Make sure that the laser system's name is displayed in the printer drop-down list. In the settings specific for this driver dialog box, make sure that **ALL** the check boxes are **UNCHECKED**. Now click on "OK" to close the "Options" dialog box.
12. The next step is to set the default value for the line width and color when drawing graphic objects. To do this, click on the outline tool, then the outline pen dialog in the fly out. With "Graphic" being the only one selected, click "OK". Click the down arrow in the Color dropdown box to expand the list and click on the color red. Click the down arrow in the "Width" dropdown box to expand the list and click "Hairline". The units can be "Inches", "millimeters" or anything else you prefer. Click "OK" to close the Outline Pen

dialog box.

13. In the top menu, click “Tools, then click “Color Management”. Click on the down arrow to expand the “Style” dropdown list. Click “Color Management Off”, and then click “OK”.
14. Finally, at the top of the screen, click on “Tools”, then “Options”, then “Document”, and then select “Save Options as Defaults for New Documents”. Make sure **ALL** the options listed are **CHECKED** then click “OK”.
15. The setup defaults for CorelDraw 12 are now complete. Whenever you start a new document, all of the default settings that we had setup will automatically apply to the new document.

AutoCAD 2000i, 2002 and 2004 for Windows 2000/XP

NOTE: AutoCAD version 2000 is not compatible with ULS laser systems. You must upgrade to version 2000i or higher.

1. Make sure the ULS Printer driver is installed prior to setting up AutoCAD.
2. If AutoCAD is already installed and you are just upgrading ULS printer drivers:
 - Close all open programs.
 - In Windows, Click Start>Printers & Faxes.
 - Delete ALL ULS drivers from the Printers (Printers and Faxes) folder.
 - With the Printers and Faxes folder still open, click File>Server Properties>Drivers and remove ALL ULS printer drivers from the list. Close Printers & Faxes.
 - Using Windows Explorer, search for all files and folders with a .pc3 extension then delete all ULS Printer pc3 files (i.e. M-360.pc3).
 - Next, search for files with a .pmp extension and delete all ULS Printer .pmp files (i.e. M-360.pmp).
 - Reboot the PC.
3. Start AutoCAD and open a new drawing.
4. Click File>Plotter Manager, and double-click Add a Plotter Wizard. If the Autodesk Hardcopy System window appears, select the version of AutoCAD you are using, and then click Continue.
5. Click Next. Select System Printer, and then click Next.
6. Select the appropriate ULS Printer Driver, and then click Next.
7. **DO NOT** click the Import file button, simply click Next.
8. You may edit the plotter name, if desired, and then click Next.
9. Click on Modify Standard Paper Sizes (Printable Area) in the Device and Document Settings Tab window, and then click the Modify button. Change **ALL** margins to 0.00, and then click Next.
10. Edit the PMP file name if you desire then click Next. **DO NOT** click the Print a Test Page button, click Finish. Click OK to exit the Plotter Configuration Editor window and then click Finish.
11. Click File>Page Setup, and then select the Plotter Configuration name, pc3 name (not the driver) from the dropdown list.
12. If you would like to change the drivers settings, click the Properties button, then click the Custom Properties button. Make your changes and then click OK and then OK again.
13. Click New to create a new Plot Style table to set your pen widths. As a default, the ULS print driver produces vector output when pen widths are set to 0.001 inches (0.025 mm). If the pen widths are set between 0.002 – 0.008 inches (0.050 – 0.20 mm), then the ULS print driver may or may not convert the lines to raster images – this will depend on the image

being plotted. Therefore it is recommended that for colors requiring vector output, set the pen widths to 0.001 inches (0.025 mm), and for colors requiring raster output, set pen widths greater than 0.008 inches (0.20 mm). So now, select Start from scratch, and then click Next. Enter a name and then click Next. Click the Plot Style Table Editor button. Click Color 1, hold the shift key on your keyboard and click colors 2 through 7. You can only use colors 1 through 7 with the ULS printer driver. With all 7 colors highlighted, click the Edit Lineweights button and then select the units desired. Add a lineweight of 0.001 inches (0.025 mm) to the Value column by clicking on Edit Lineweight and entering 0.001 (or 0.025 for metric settings). Click OK, click Save & Close, and then click Finish.

14. Click the Layout Settings tab and set the Plot Scale to 1:1.

15. AutoCAD is not set up properly to work with the ULS printer driver.