

Laser Cutter Setup

Digital Media Lab Equipment Tutorial 2004 - 2005

The laser cutter should be thought of as a plotter. Any application that prints can be cut on the laser cutter. It cuts two ways: **Vector** or **Raster** cutting. Vector based cutting follows lines, circles, etc. Raster based cutting is used with digital images.

M-300: 24"x12" Small Laser Cutter

X-600, X-660: 32"x18" Large Laser Cutter

The laser cutter cartridge should be set to 4 inches above your cutting material.

The height of the cutting bed and cartridge can be adjusted on the control panel on the front display of the laser cutter. Instructions on setting the height are posted above each of the laser cutters.

General Instructions For Plotting To The Laser Cutter

See next page for specific instructions on plotting from AutoCAD 2004.

Step 1: Open your file to plot. Select **Print Setup** from the **File** menu. Select the **Properties** button to display the following window:

Step 2: Click on a line color to adjust the power of the laser and the speed of the cartridge.

High Power and Low Speed = Deeper cuts

Low Power and High Speed = Lighter cuts

The colors coordinate with the line colors in Vector based programs such as AutoCAD.

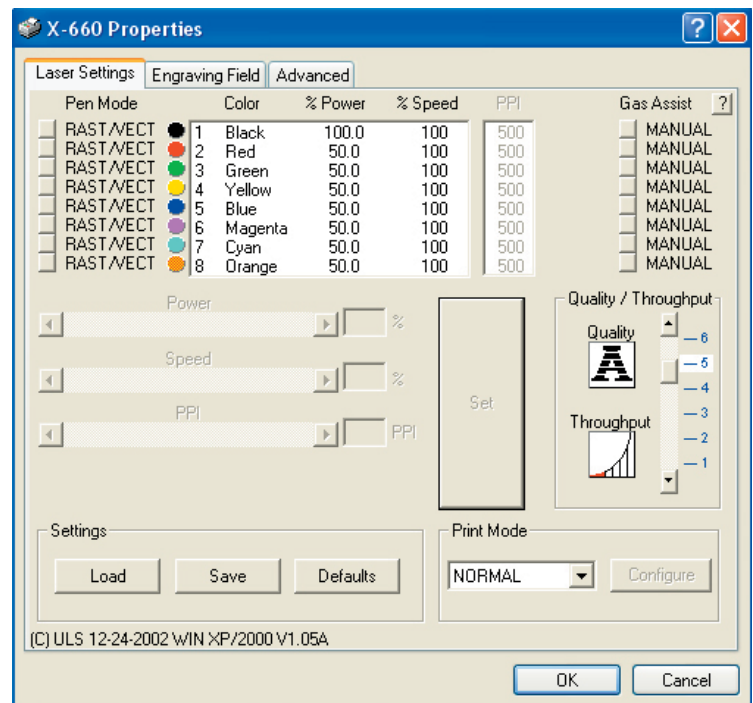
Step 3: Click the small boxes to the left of the color to select **VECT**, **SKIP**, **RAST**, or **RAST/VECT**.

-Select **VECT** for line colors to plot from vector based programs (AutoCAD)

-Select **SKIP** for line colors in the file the laser cutter should ignore and not plot.

-Select **RAST** to plot rasterized images of that color.

-Leave **RAST/VECT** for digital images with no vector information.



Each line color should be adjusted separately, one at a time. Once the Power and Speed settings are configured for the line color, click on the Set button to lock in the settings, then configure the next line color, etc.

Rasterized Images will be plotted as grayscale. The power is automatically adjusted by the gray scale information in the image.

Step 4: Click **OK** to send the file to the laser cutter, it will be visible on the control panel display (rasterized images take longer to spool and may take up to 2 minutes to appear on the display of the laser cutter).

Step 5: Press the green **Start** button on the laser cutter to start the plot. When complete, the laser cutter will beep. You can open the cover and remove the media.

If the cover is opened during cutting, the laser cutter will stop and the cutting head will move over the plot to trace out the lines. You should start the job over by pressing the Start button again.

Step 6: Turn OFF the laser cutter, this allows the laser to re-ionize and re-charge.

*** For troubleshooting tips, go to the last page of this tutorial for possible reasons for certain errors and what you can do to avoid them.

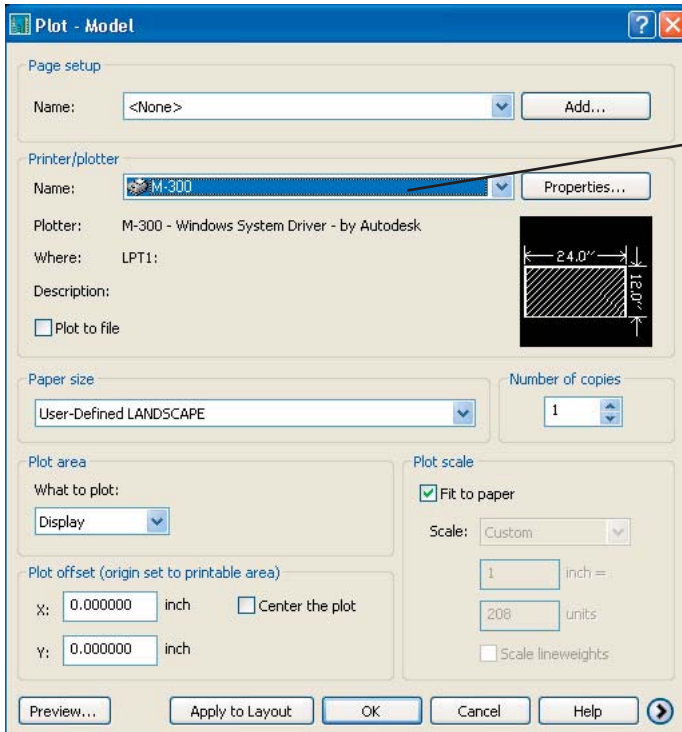
AutoCAD 2005: Plotting to the Laser Cutters

NOTE:

- All colors used in your AutoCAD file must be of the 8 main colors (black/white, red, green, yellow, blue, magenta, cyan, orange). Custom colors will not match up with the laser cutter plot settings.

- When selecting plot settings for speed and power of the laser, the color black refers to the white line in the AutoCAD file. It should be set to VECT only. Leaving it on RAST/VECT will digitize the image; the laser cutter will try to plot the entire background of the file.

STEP 1: Open your file to plot. Select **File - Plot**. The Plot window will appear:



STEP 2: Select the correct plotter driver for the laser cutter.

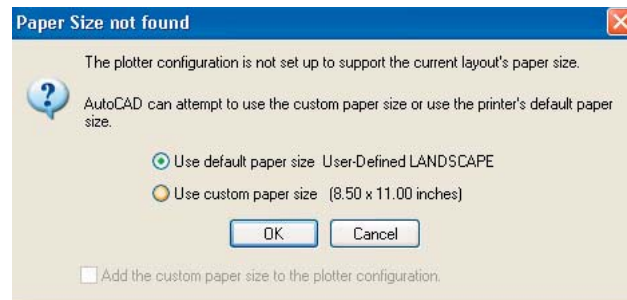
M-300: Small (24" x 12")

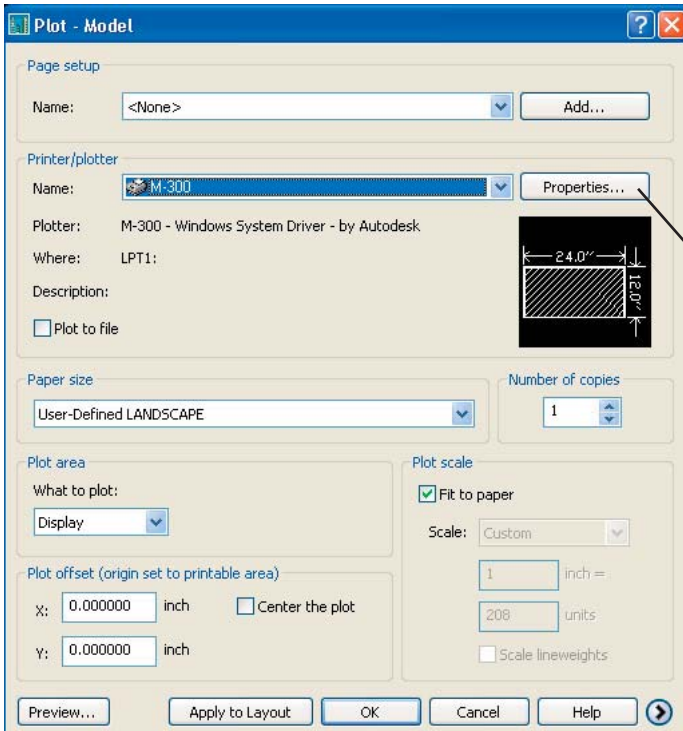
X-600: Large (32" x 18")

X-660: Large (32" x 18")

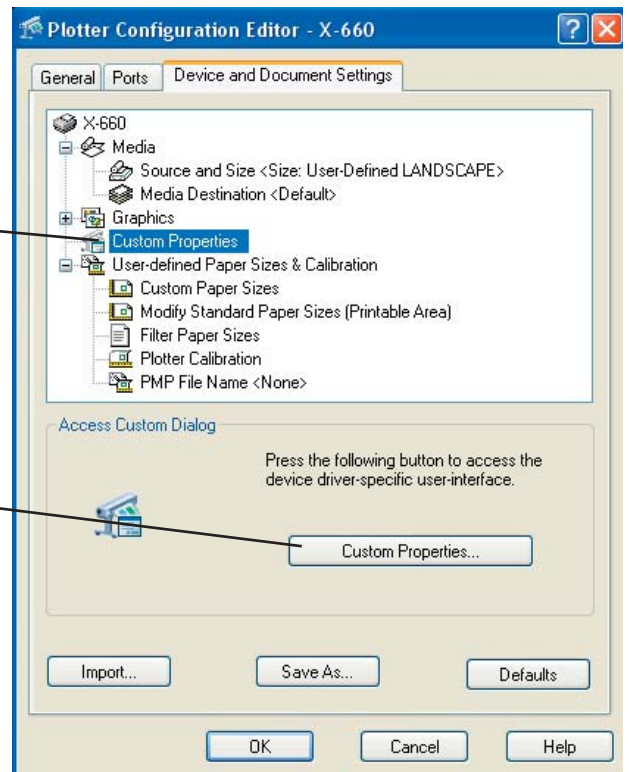
Important: It is recommended to select the main driver (name of laser cutter without .pc3 extension) rather than an existing .pc3 driver, which may cause errors in your plot.

Click OK at this window.





STEP 3: Click on the **Properties** button. The following window will appear:



STEP 4: Activate the Device and Documents Settings tab, and click to highlight **Custom Properties**.

STEP 5: Click the **Custom Properties** button to open the speed and power settings window.

STEP 6: Set the speed and power settings as required, or load preset settings.

In the **Pen Mode** column, click the small box to VECT for each color to plot in your file.

Each color's settings must be entered separately. Click on the color name to highlight the line (only 1 line should be highlighted at a time) and change the power and speed setting accordingly.

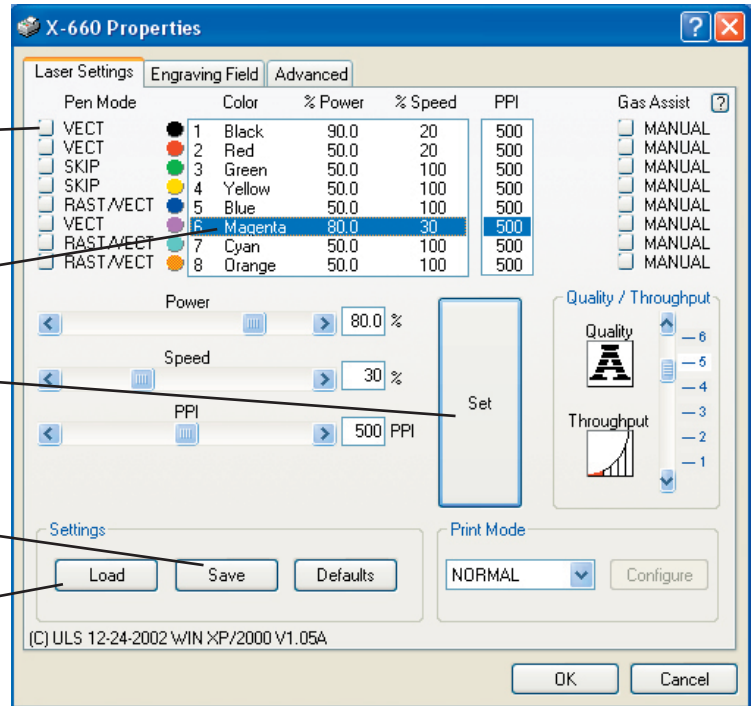
Click **Set** to establish the settings for the color.

Do this for each color you wish to plot in your file.

You can save the above Power and Speed settings for use in another file by selecting the **Save** button.

You can load Power and Speed settings you have already saved by selecting the **Load** button.

Click **OK** when done to load the settings for your file.

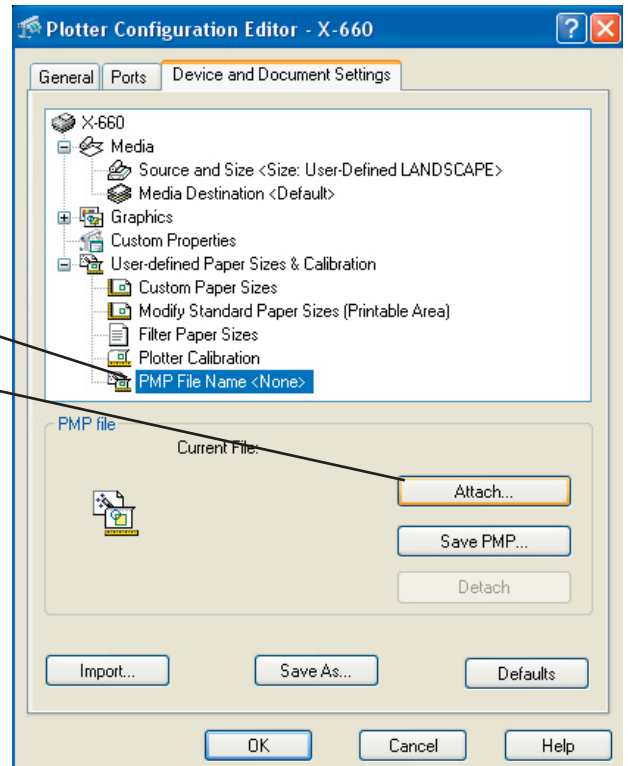


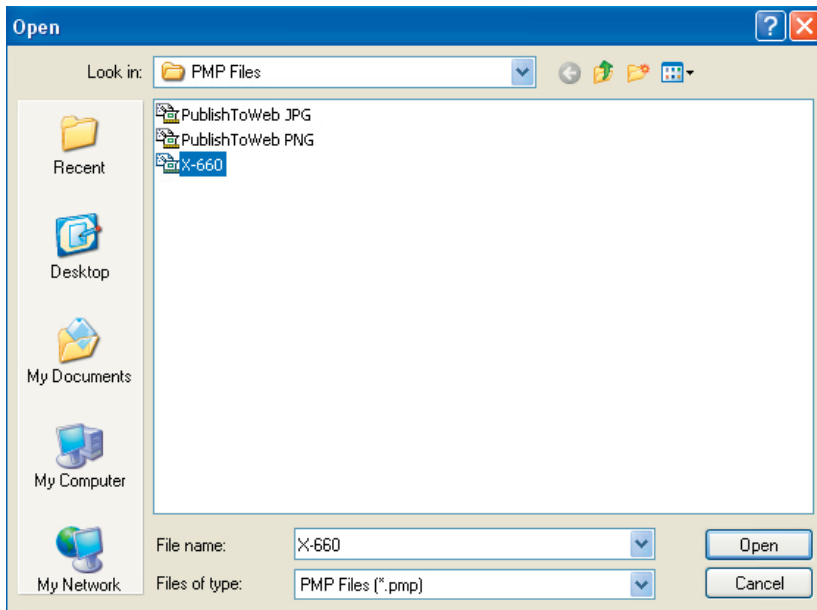
STEP 7: In the Device and Documents Settings tab, click to highlight **PMP File Name <None>**.

Click the **Attach** button.

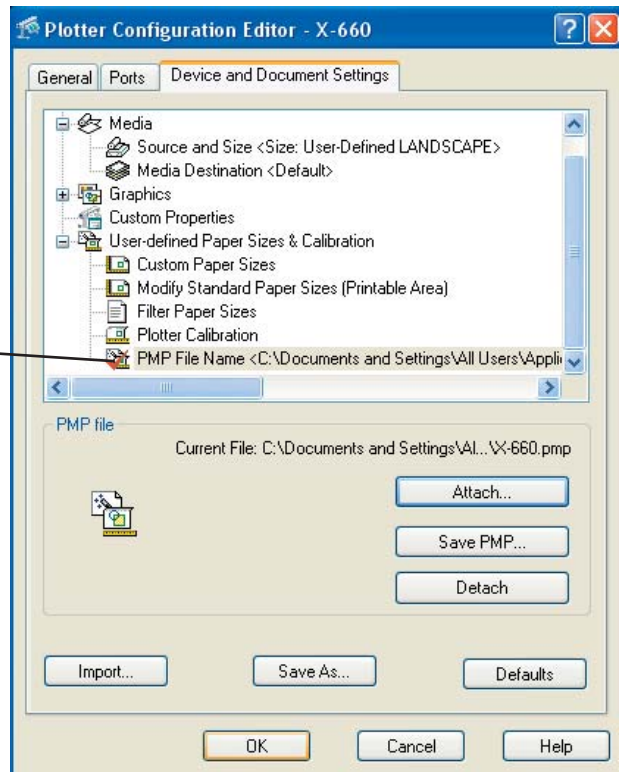
The .pmp file sets the printable area to the exact sizes of the laser cutter bed without any margins.

If the .pmp file is not loaded, the file will be slightly scaled down to accommodate a 1/2" margin in the laser cutter. This makes your file slightly smaller. Using the .pmp file will avoid this.



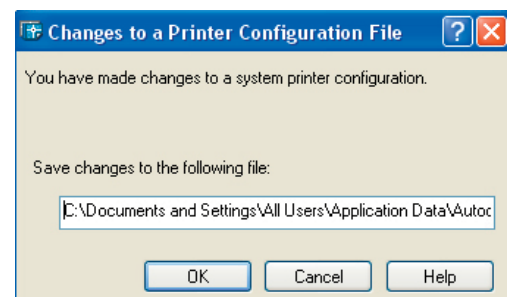


STEP 8: Select the correct .pmp file for the corresponding laser cutter. Click **Open**.

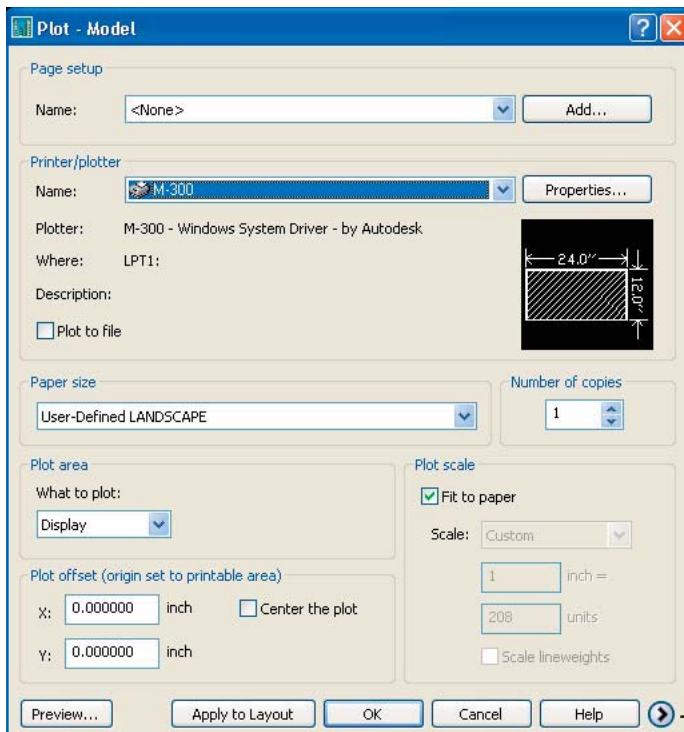


STEP 9: Verify the .pmp file is loaded.

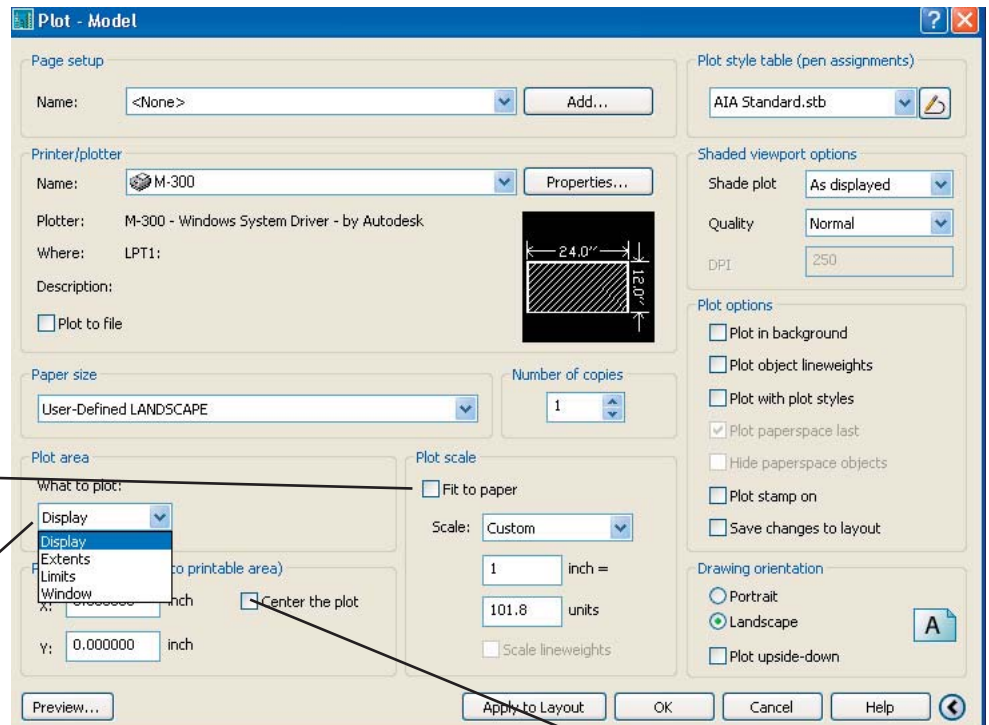
Click **OK** to save your settings.



STEP 10: The following window will appear. Click **OK** to save your changes.



STEP 11: Click on the arrow button to expand the settings window.



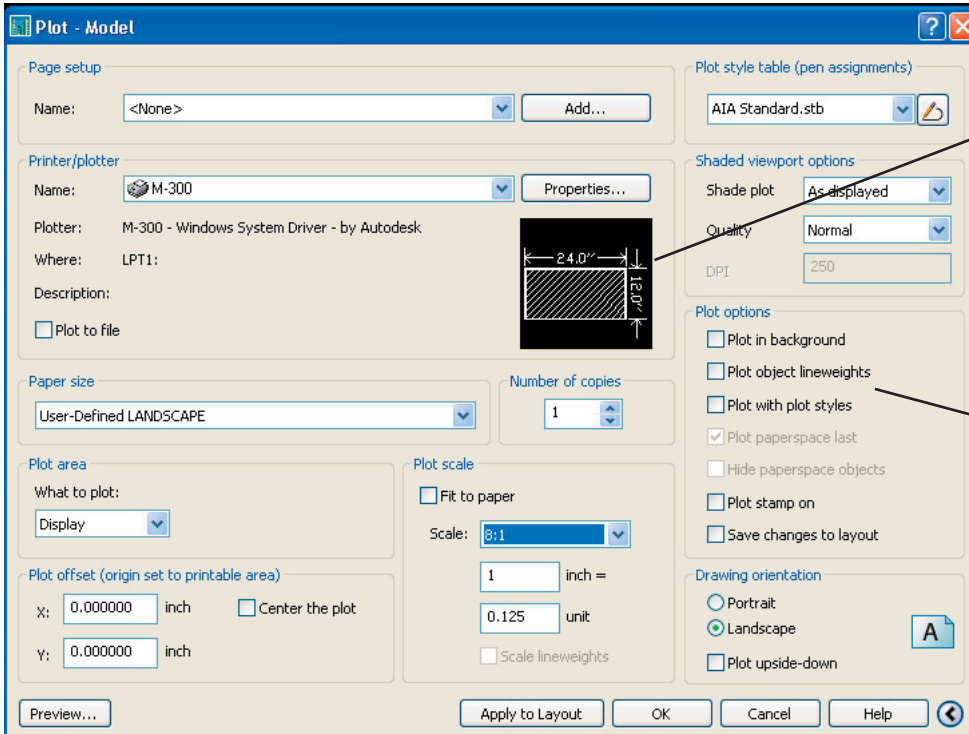
STEP 12: Select the plot area based on how your file is set up.

- Adjust the **Plot Scale** if necessary.

- Click **Window** if you want to draw a box around the area to plot.

STEP 13: Adjust the Plot Offset settings. Uncheck **Center the plot** if needed.

STEP 14: Verify that your settings are correct:



The correct dimensions should appear for the Laser Cutter being used:

M-300: 24" x 12"
X-600: 32" x 18"
X-660: 32" x 18"

Both "Plot object lineweights" and "Plot with plot styles" need to be unchecked.

Step 15: Click **Full Preview** to view a preview of the plot. In the preview, check the scale and positioning of the file.

If the preview is incorrect, the plot will also be incorrect!

Step 16: Click **OK** to send the file to the laser cutter.

Laser Cutter Guidelines and Troubleshooting Tips

General Laser Cutter Guidelines:

- The laser cutter glass cover must be completely closed on all sides for the laser cutter to plot.
- The laser cutter must be on and the display should read "Ready" when sending your file.
- Only one file can be sent at a time. The laser cutter does not have a print queue of files. The laser cutter will plot the last file sent.
- If the laser cutter is plotting thick lines, or uneven lines across the cutting bed (i.e. the upper left side's lines are thicker) the lens needs to be properly cleaned. See a DM Staff member to clean the lens.
- Files plotted from Photoshop should be saved as .jpg images to reduce file size and flatten layers.

AutoCAD Troubleshooting Tips:

- Line colors must be limited to the 8 main colors in AutoCAD (black/white, red, green, yellow, blue, magenta, cyan, orange). Custom colors will not plot to the laser cutters.

- **Plot object lineweights** and **Plot with plot styles** should be **unchecked**.

- Click the **Full Preview** button to verify the following are correct:

- orientation
- scale
- lines

