

**If you wish to become a laser cutter kung-fu master...
A god among architecture students...**

This is your tutorial

Power Levels Explained

This is the point where the cutter assigns power settings to all of 8 colors, only two of which are turned on by default. You will notice that for this material, yellow has custom power levels set, but is turned off – this is a deeper, ‘bendable’ score setting, which is set up for materials that are bendable.

You can customize these settings for each color:

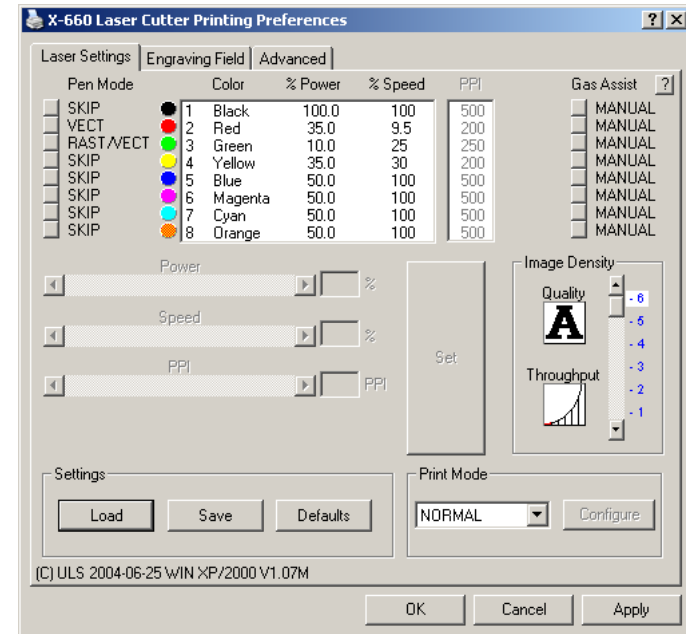
•**Pen Mode**: this cycles between ‘Skip’ ‘Rast/Vect’ ‘Rast’ and ‘Vect’. Skip is obviously off, but you have three choices for an ‘on’ setting.

- Vect[or] mode refers to objects that may be represented with lines, arcs, curves; most objects in AutoCAD are vector objects. The laser will simply trace the outlines of this type of object.
- Rast[er] objects are represented by an array of pixels/dots (digital photographs are raster images). The laser cutter will treat any object with a thickness greater than zero as a raster object; in AutoCAD these are solid hatches, lineweights, and unexploded text objects. Because the laser beam is very narrow, the cutter deals with raster objects by making a series of closely spaced horizontal passes, which is usually very time-consuming. Use raster objects with care!
- So, for each color, the laser cutter can be set to cut only raster or vector objects, or both.

•**Power**: this represents how much energy the laser beam is given; this setting is generally proportional to cut depth for a given material.

•**Speed**: how fast the laser carriage moves around; this setting is inversely proportional to cut depth for any given material.

•**PPI**: (Pulses Per Inch) the laser beam does not stay on continuously, but cycles on and off at high speed. If you turn this down far enough, you would get a series of perforations instead of a continuous cut. Generally this does not affect cut depth, and you will not



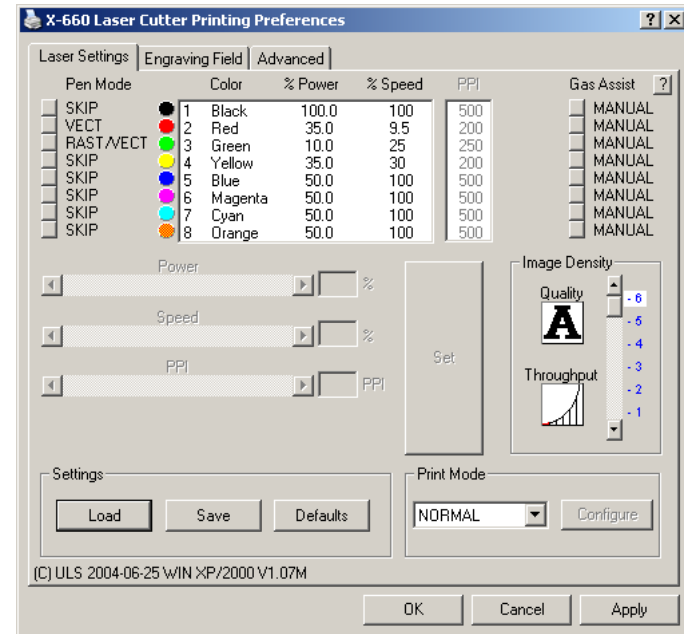
Power Levels Explained

Turning different colors on and off is done by clicking the square in the 'Pen Mode' column repeatedly.

In order to make changes to power, speed, and PPI, select the name of the color you wish to change. Notice that the sliders light up; make your changes there, then press the tall, vertical 'Set' button to the right. If you don't press this, any changes you make will be lost.

It is possible to save custom settings; if you have a particular material for which we have not calibrated yet, or if you have exacting requirements. Of course, you can't save in the same folder where all of the public settings reside, so find a spot on your Z drive, or your flash drive.

And, of course, changing power settings is a matter of trial and error, so do run a test cut to ensure that your custom settings are to your liking.



More Marginalia

It should be noted that the rulers only nominally line up with the edges of the plot 'paper', and the origin is really not quite exactly at the lower left corner of the rulers.

Basically, if you want to line up the edge of your material precisely with the rulers, it's not going to happen directly.

But! There is another way: to cut a 'jig' that will pad out the unknown amount of space around the rulers and give a precise location. To do this, cut the outline of your material from a bit of scrap. Leave the scrap that is the complement of your piece, so that your piece fits neatly into the remainder of the scrap. With the layout of the cut you made into the scrap, the exact position of your piece can now be matched from your drawing to the cutter bed.

1. The piece that needs more cuts to be done on it... but how to align it?
2. The outline of the piece drawn out for cutting a jig.
3. The jig.
4. The cuts to be accomplished on the original piece, aligned the same as the cut on the jig.
5. The final cuts, located precisely with the help of a jig.

