

## Guidelines for Preparing Graphics for Illuminatus Laser Lightshows

Laser graphics are brilliantly colorful, captivatingly eye-catching, and a treat for the audience. But like all image formats, they have their limitations. Such graphics are not video; they don't provide the complex imagery found in video or photography.

### How It Works

Laser graphics projectors work by bouncing a laser beam through devices called galvanometers, or galvos for short. This is a combination of two mirrors: one moves the beam up and down, and the other moves the beam back and forth. This is called a raster pattern and is exactly like the way old-fashioned CRT TVs work. The big difference is that in a TV, it is an electron beam that moves, sketching out the video image against the phosphor-coated inside of the tube. The issue is that inside a TV tube, the beam can move a lot faster than our lasers can, as the scanning of a TV beam is controlled by magnetic fields. Our lasers' galvos are mechanical, and, having mass, can't move as quickly as a magnetic field can.

The laser graphic projector works by having a computer control how the galvos aim the beam, and by having the brightness of each laser under the control of the computer programming. There are three lasers in our projectors: red, green, and blue, and their outputs are optically combined into a white beam. The computer moves the combined beams around via the galvos, and changes the color by controlling the relative brightness of the three lasers.

### Preparing Graphics

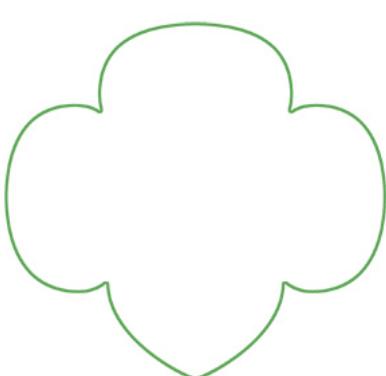
Our graphics artist can deal with almost any format: JPG, PNG, TIFF, etc. He works in Photoshop and can turn almost anything into a usable laser image, with the exception of detailed photographs – see next page.

What works best are images that are as high-resolution as possible, ideally in the 300DPI range. But our guy will do his best with whatever he is sent. If you have graphics in printed form, you can scan them or send them to us for scanning. Sending them may be problematic for precious historical documents, so you may want to find someone on your staff who has access to a scanner. If this can be done, have that person scan at 300DPI and send us the resulting images as JPGs. If you have several images, it is best to put their JPGs into a folder, then Zip that folder and email it to: [mgould@mondodyne.com](mailto:mgould@mondodyne.com).

Lasers project outlines, and work best with simple shapes. The more complex the design, the more flicker you get as the laser galvos struggle to trace the design. We have software that can convert a drawing or illustration into an outline. Here is an ideal candidate for a laser graphic projection:



With our graphics software, we would transform this into an outline:



(Fortunately, our green lasers are the most visible in our projectors; the human eye is most sensitive to green.)

The following are also doable. While complex from a tracing standpoint, our galvos should be able to deal with these:



This photo, on the other hand, would not work as a laser graphic:



Too much texture is involved. This we could project with a video projector, see below.

## Text

Text is very easily done with our projectors. We have a variety of fonts and special effects available. With two projectors, we can simultaneously project text and imagery.

Here is an example of combined image and text (artist's conception, done in Photoshop):



The text can flow, curl, and perform other tricks.