Engraving on Glass with your ULS Laser - Optimum Techniques

1. CONVENTIONAL GLASS ENGRAVING WITH SOLID BLACK IMAGE, 2.0” LENS IS NOT BEST METHOD.

* Glass tends to chip and leaves fragments.
* Engraving does not look sharp.
* Etching through wet paper (another technique) does not solve problems.

2. SUPERIOR METHOD - HALFTONE WITH ULS PRINT DRIVER

* Change all items to 60% - 70% gray - ULS print driver will halftone the image.
* Run 500 PPI & Image Density 5 (500 DPI).
* Use 1.5” lens (2” works, but not as sharp).
* Run at 100% Power.
* Run Speed = Wattage of Laser (example: 40 Watts = 40% Speed).

Results: Smooth texture, much less chipping, brighter and cleaner finish.

Can color fill with Rub-n-Buff® or oil-based paint. Etching holds paint so it is not buffed off.

EXAMPLE BOX OF 70% GRAY

3. USE HIGH POWER DENSITY FOCUSING OPTICS (HPDFO) - GET DETAIL, DEPTH, HIGH RESOLUTION

Engraved on M-360 60 watt laser with HPDFO at 60% power, 50% speed, 1000 PPI, Image Density 6.

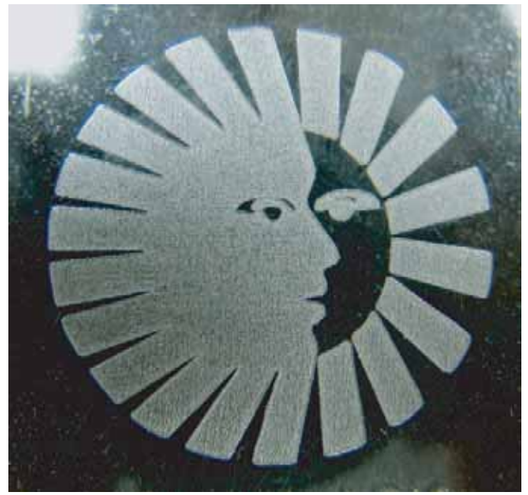
* Use solid black color (no halftone gray).
* Use "Calculate" for Image Enhancement.
* Manually set **Contrast** to 100% (gives extra power to the edges of fonts for sharp effect).
* Increase **Definition**10% over calculated setting.
* Set **Density** to 50% (thins characters, keeps features from blending together).
* For best results, tune machine on scrap glass before you run your file.
* This technique also works with the 1.5” lens, but the detail is not quite as sharp.

MAGNIFIED VIEW: TIMES NEW ROMAN 4 - 14 POINT

4. ETCHING IMAGES WITH HPDFO

With method from #3, engrave image, logo, clip art, etc.

* Sandblasted look.
* Bright, smooth finish.
* Excellent consistency.
* Good depth.



5. GOING DEEP INTO GLASS WITH HPDFO

* Use methods from #3, but slow down to 10% - 15% speed; use multiple passes.

* You can achieve substantial depth into glass without damaging the surrounding area.

* Depth in this example is 0.030” (1/32”), about the depth of a rubber stamp.

* You may need to use a brass wire brush to remove debris between passes - tape glass to table before starting job so that it will not move if you brush it.

6. SPECIAL TECHNIQUES

INLAY INTO GLASS WITH HPDFO

* Engrave with sufficient depth as in #5.
* Cut thin inlay for precision fit using HPDFO.

Mother of pearl is shown here.
HPDFO deep engraving makes this possible.

ETCHING INTO CRYSTAL

* Use 1.5" lens per #2 or HPDFO per # 3. Most crystal will work, but test material before running. (Not recommended for thin lead crystal or high-cost items.)