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# Model DLP-2

## Direct Laser Patterning



### FOR LARGE PARTS

- Large Area Production Tool
- Direct Single Step
- Separated X/Y Stage (Gantry)
- X-axis Moves Beam Overhead
- Y-axis Moves Part
- Shown here is Boeing 787 Cockpit Window

## Model DLP-2 Laser Tool for Patterning Thin Films

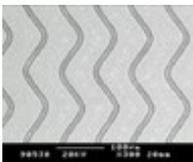
**Model DLP-2** is a large part production tool. Patterns thin films on all substrates. Uses a gantry, a separated X/Y stage to move both beam and part. Magnified video viewing through the laser focusing lens is available providing operator feedback, fiducial registration and inspection. It can also provide, depending on budget and need, high speed with small feature size and high accuracy without tradeoffs for part size.

Choice of laser wavelength depends on feature size required—among other factors. A frequency multiplied solid state diode laser is used for small features and a solid state optical fiber laser is used for larger feature sizes. Normally, precision tool pins are used to define part position with reference to the stage zero and travel. For 3D parts an optional air-bearing Z-follower is available

### SPECIFICATIONS\*:

- **Throughput:** Depends on pattern complexity, i.e. the sum of all the segments divided by writing rate.
- **Chemical Safety:** Laser patterning is a dry process, environmentally safe
- **Laser Safety:** CDRH Class I rated for eye safe operation without goggles. Interlocked.
- **Laser:** Solid State diode pumped. Frequency multiplication and fiber laser are options.
- **Min Feature Size:** Minimums of 5, 10 and 30 are available.
- **Max Feature Size:** Maximum of 100 um
- **Rep Rate:** Choice of 100KHz with diode laser or 500KHz with fiber laser
- **Wavelengths:** Choice of 1064nm IR, 532nm green and 355nm UV
- **Pulsewidth:** 30ns typical (provides clean removal)
- **Average Power:** Depends on choice of laser
- **Viewing:** Magnified through the lens using video camera and flat panel 19" display
- **Magnification:** 60X viewing, real time, on video monitor
- **Targeting:** Electronic crosshairs visible on the monitor
- **Telescope:** Beam expander to reduce spot size and correct for chromatic aberration
- **Stage Options:** Closed loop X/Y dc servo motors, optional linear motors and Z-follower for X/Y/Z axes
- **Travel:** Up to 60" x 60"
- **Resolution:** one micron on encoders, 0.5um optional
- **Programming:** PC with CAD/CAM software to convert dxf to laser machining code, also known as picture to part—go direct from your drawing to motion.
- **Monitors:** Two 19" flat panel displays for (1) computer and (2) video inspection
- **Frame:** Welded steel frame, unified, compact construction, minimal footprint
- **Laser Coolant:** Water or air, depending on choice of laser, no external water required
- **Power:** 110VAC, 50/60Hz, single phase, 15a service
- **Weight:** Depends on travel
- **Footprint:** Depends on travel. Attached X/Y versus separated X/Y reduces footprint by 75%
- **Options:** Type of laser, M1 Optics Head, servo or linear motors, resolution, software, Z-follower, computer controlled spot size, and fume/particulate removal

\*Specifications subject to modification and improvement.



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