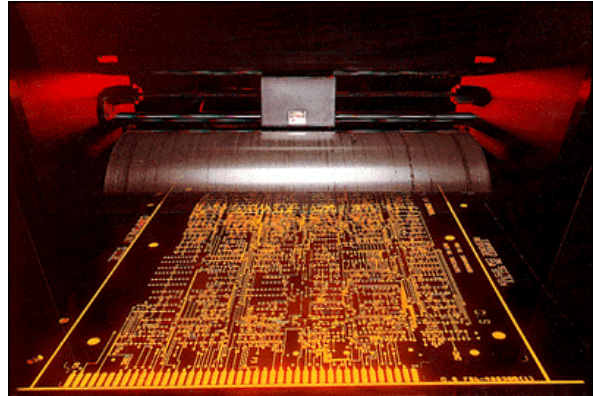


## Photo Tooling Information Sheet

### Photo Tooling Services

Tennyson Graphics has the facilities to photo plot PCB's and other high precision artwork.

A Printed Circuit Board (PCB) is a flat board made of plastic or fibreglass, on which electronic components such as resistors, diodes, IC's, CPU's etc are attached. Open up the back of a PC, with the power off, and you'll discover most electronic equipment have them. The board's components are linked together in a grid of conductive metal tracks and pads. These are used in industry to control and operate equipment from the humble dishwasher, telephones, personal computers, automobiles, etc.



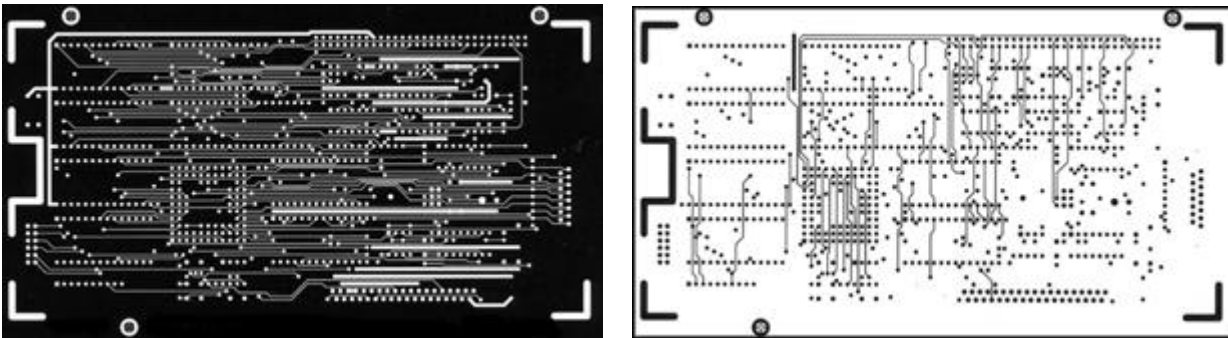
The precision and quality of Tennyson Graphics' film work is something of which we are very proud. Many customers use our service for laser-plotting:

- [PCB](#) - printed circuit board layouts
- [Templates](#) - high accuracy templates for measuring, banknotes, forme cutting
- [Windscreens patterns](#) - for the automotive industry
- [Specialized patterns](#) - for photo-engraving for etching
- [Security Designs](#) - customer made, fine definition designs for ID cards and checks.

## Photo Tooling Information Sheet

### PCB Photo Tooling

Tennyson Graphics utilizes the Scitex Insight System, which provides computer-based graphics for automating many aspects of printed circuit board prefabrication. It allows for interactive correction and refinement of circuit designs, the generation of NC drill data, and can perform a range of tooling and job control functions. Most importantly, through the system Tennyson Graphics can generate a complete set of high precision photo tools for production.



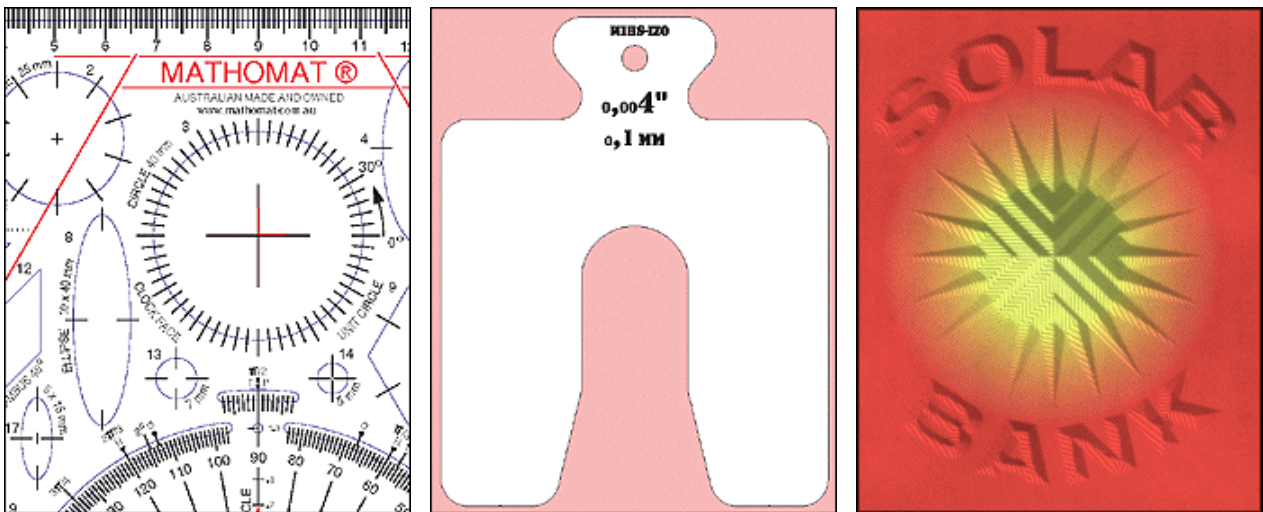
We can edit layer data, by either automatic or non-automatic means when necessary. We are also able to scan existing photo tools and supply them as raster or vector data files.

- **File Formats** - Tennyson Graphics can produce film artwork from a variety of the common file formats, including Gerber, SIF, Applicon, Smartwork, AutoCAD, Postscript, PCAD, Protel and Mutoh file formats.
- **Media** - we accept your data on IBM & MAC format floppy disks, CD ROM, 1600 BPI Magnetic tape, ZIP drive, JAZ drive (1 GB only), DDS tapes, Syquest disk, but preferably by [email](#).
- **Step & Repeat** - PCBs can be duplicated or "stepped up" during exposure.
- **Large Format** - we can photo plot up to 1010mm x 1850mm, positive/negative, emulsion up/emulsion down on either 0.004" or 0.007" films.

## Photo Tooling Information Sheet

### Templates & Measuring Tools

Many customers use our service for laser-plotting high accuracy templates (measuring, banknotes, forme cutting), car windscreen patterns, specialized patterns for photo-engraving and etching, and also customer made, fine definition designs for security printing.



Left to right: Tennyson Graphics calculated the cutting paths for the Mathomat; produced high accuracy films for photo-engraving this template; and designed and produced separations for the check security pattern.



## Photo Tooling Information Sheet

### Unsurpassed Accuracies

Tennyson Graphics has three large format, high precision drum plotters. These are capable of exposing a maximum area up to 1010mm x 1850mm (40" x 73" approx.) on a single sheet. The longer dimension is the circumference of the drum.

Resolutions are continuously variable over a range of 4 to 100 lines per mm (100-2540 lines per inch approx.). Resolution increments are 1 micron axially and 2.5 microns circumferentially.

We also have a smaller format Scitex Raystar flatbed plotter capable of similar accuracy and resolutions to a size of 470mm x 635mm.

- **Film Stability** - for high accuracy film work we recommend 0.007" thickness film, and we maintain a clean and temperature-controlled environment for exposing and developing all film products.
- **Quality Film** - Tennyson Graphics uses only quality Agfa film and chemical products.
- **High Accuracy** - the incremental accuracy and repeatability is  $\pm 5$  microns. The absolute accuracy and repeatability is  $\pm 25$  microns over the entire plot area of 1010mm x 1850mm.
- **Quality Control** - Tennyson Graphics owns and uses sophisticated measuring devices to keep check on our quality and accuracy, including a DM-500 Densitometer, a Leitz HM LUX3 40x magnification microscope, and periodically has the accuracy of our film work independently assessed.



## Photo Tooling Information Sheet

### Further Information & Links

#### Downloads

[Photo Tooling information contained on this website \(Microsoft Word\)](#)

#### Contacts

[Tennyson Graphics International Pty Ltd](#)

[Math-O-Mat](#)