

QUICK LASER™ Service

Datasheet & Overview

MIRACO...connecting technology

Services Overview



Miraco's QUICK LASER™ service is the FPC (flexible printed circuit) manufacturer's solution to finishing problems. Our team of dedicated professionals will perform your laser finishing and rework quickly and efficiently.

Unlike other job shops, Miraco's team has the experience to handle the unique problems associated with finishing FPCs. Miraco's specialized optic systems and operating programs solve processing issues, such as light refraction, bounce, shrinkage and inconsistent material thickness. Miraco's QUICK LASER Service allows you to streamline manufacturing, increase production capacity and profit margins.

Finishing Options & Features

Complete Finishing is the ideal option for prototype and complex production parts:

- Image, etch and laminate the panels and Miraco does the rest
- Eliminate interruption of manufacturing processes
- Even if your panel was not originally layed out to laser, Miraco can still meet your needs

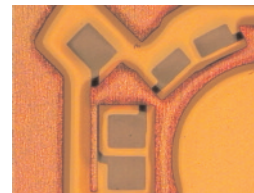
Single-Sided Exposure of your FPC panel with QUICK LASER eliminates time and labor:

- Avoid glue squeeze-out on exposed areas
- Obtain tight registration tolerances between a window and an etched feature
- Manufacture small and/or square features

Double-Sided Exposure of your FPC panel is reliable and cost-effective:

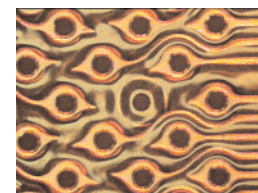
- Remove center film
- Eliminate glue squeeze-out on exposed areas
- Obtain tight tolerances (+/- .002") between layer windows

Before



Single-sided exposure and outline of two-layer FPC with .030" x .050" rectangular pads

After



Single-sided exposure and through-holes of a two-layer FPC with .042" dia. exposures on a .100" x .050" through-hole connector pattern



Double-sided exposure of 2 oz. copper fingers on .100" pitch FPC



Finishing Options & Features

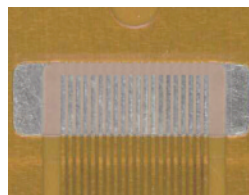
Outlining and Selective Outlining with QUICK LASER. Frees you from the limitations and cost of conventional outline tooling:

- Tolerances as low as +/- .002" OL/SO
- Automatic compensation for panel distortion/shrinkage
- Intricate holes and details down to .006"

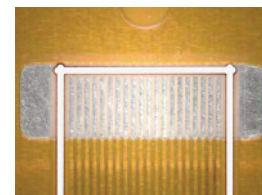
Rework your FPC panels and turn scrap into product:

- Remove glue squeeze-out in plated through-holes and on surface mount pads
- Remove permanent nomenclature
- Correct drilling/routing errors
- Rework cover films registered incorrectly
- Remove solder mask

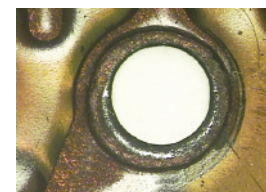
Before



After



ZIF outlining of FPC with 0.5 mm pitch conductors and polyimide stiffener on far side



Glue "squeeze out" removal from .050" dia. hole to create 0.010" minimum platable annular ring

Benefits

When is Laser Finishing of Flex Preferred and Why?

Prototype & Low-Volume Jobs. *Gain the competitive edge.*

- **Quick Delivery** - Turn prototypes faster using our 24-hour turnaround QUICK LASER finishing service
- **Tooling Changes** - Prototypes evolve, and with lasering program modifications, they cost a fraction of new tooling
- **More Efficient** - Free up your firm's finishing, routing and engineering resources

Low to Mid-Volume Jobs. *Lower cost, great quality.*

- **Outlining Complex/Tight Tolerances** - QUICK LASER gives you the tooling cost of a steel rule die, the lead time of routing, the accuracy and precision of a hard die without any of the associated deficiencies.
 - Steel rule dies are not capable of obtaining the accuracy and precision of tight tolerance jobs
 - Routing just does not cut it. The finish quality is poor and precision marginal
 - Continuous outlining up to 4"
- **Reduce Tooling Costs** - Not waste time and money getting a hard die for small volumes. Combine lasering with steel rule die cutting to get the best of both options without the deficiencies.
 - Class A tooling is not economical for low to mid-volume jobs
 - No die setup or first article inspections
 - No expensive dies to purchase, store or maintain

Any Volume. *Have the options you need to succeed.*

- **Partial Outlining** - Lasering only the critical portion of an outline (ex. ZIF End) and steel rule die cutting the rest is an easy method to finish higher volume parts without the expense and lead time of a Class A die punch
- **Center Film Removal** - Lasering is the only cost-effective, reliable way to remove center film.
- **Pre-Clad Exposures** - Now use pre-clad materials even for jobs that require reverse baring. Just laser it.
- **Glue Squeeze-out** - Problems maintaining critical exposures and windows because of glue squeeze-out? Eliminate the issue along with drill and routing steps with QUICK LASER finishing.
- **Window Registration** - If you need better than +/- .005 window registration, then you need QUICK LASER.
- **Rework** - Too much glue squeeze-out? Forgot to route a window? Don't scrap it, save it! Pieces or panels, QUICK LASER can rework your job, saving you time and money.

Miraco Inc. is dedicated to developing innovative high-density interconnect solutions for the flexible printed circuit (FPC) and laminated flat flexible cable (FFC) industries. Miraco solutions not only offer a complete line of standard interconnect products and customized connectors, but also the revolutionary QUICK LASER™ and QUICK CABLE™ circuit and cable finishing services. Miraco continues to maintain an aggressive research and development program focused on developing new products and processes to meet tomorrow's electronic packaging challenges.

Miraco Inc.
102 Maple Street
Manchester, NH 03103

phone 603.665.9449
fax 603.665.9459
e-mail info@miracoinc.com

www.miracoinc.com

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