

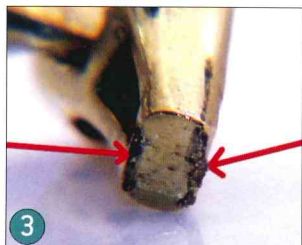
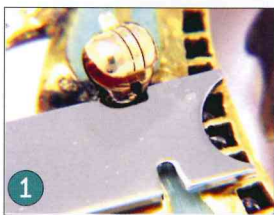
Laser Welding Tips *from Bob Staley*

Laser welders have come to play a crucial role in many jewelers' shops, offering speed, secure welds, and pinpoint accuracy for numerous repair jobs—from ring sizing and retipping to filling porosity. Yet, says Bob Staley, "laser welding is still as much an art as it is a science"—as he demonstrates in the following tips. Staley, a goldsmith and jeweler in the Atlanta area who offers a laser welding service, gives this final advice: "Experiment...document your results...and have fun!" He can be reached at bstaley@netpath.com or 1-770-382-8268.

Silver Shield:

Protecting Against Ricochets

The pulse from a laser can be focused with pinpoint accuracy—but that doesn't mean it won't sometimes ricochet off the metal. And that reflected energy could cause damage, especially if heat-sensitive stones are positioned nearby. The solution: Use a piece of sterling silver sheet to mask the areas that you want protected (1). Since silver is highly reflective, it should protect stones and sensitive areas against stray pulses. Just be sure to keep the silver free of the black sooty oxides that can develop: Even though it's reflective, silver will absorb the full impact of the pulse when darkened by oxides or masked with an ink marker. "Plasti-tack" and watchmaker's putty (2) can also be used to protect against ricochets.



A Notch Above: Ensuring a Strong Weld

Lasers can attach weld metals very securely—but only if the pulse penetrates the metal. In image 3, the earring omega back/post was laser welded, but the laser pulse did not penetrate the weld zone deeply enough—the voltage might not have been sufficient, or the duration of the pulse might have been too short. You also don't want too much



energy directed toward the zone, since that can "blast" the metal from the piece and create a void instead of a weld. The solution: Cut a groove, notch, or angle on the piece at the weld zone (4). Now you can weld and "backfill" the joint to get a strong connection (5).

Round and Round:

Organizing Welding Wire

In traditional bench work, keeping tools and supplies organized—and easily identifiable—can ensure a job proceeds smoothly. The same holds true in laser welding, especially when it comes to wire stock. Some jewelers use handy plastic spools supplied by laser wire distributors to keep their wire organized and identified. Others use "floss bobbins" (6) that can be found in any arts and crafts store. With either, they use permanent markers to identify the different gauges and types of wire—and then keep them within easy reach.



Piece Work: Holding Small Parts

Lasers may offer a technological advantage to today's bench jeweler, but that doesn't mean some of the tried-and-true methods can't be applied to them. For instance, if you have to weld small parts, try an old stone setter's trick: use



beeswax or sculpture wax to hold the parts in place (7), much as you would if setting melee diamonds. The wax will melt a bit when the metal is pulsed with the laser, but it won't contaminate the weld zone and interfere with the welding process.

Sure Shots: Experimenting with Beam Angles

If you're having difficulty achieving a solid weld, don't immediately change your laser parameters; instead, try changing the angle at which you're shooting. For example, shoot at the top half or side edge of a prong (8) instead of straight-on with a full beam in a perpendicular fashion. Laser pulses are light pulses, and the degree to which they are absorbed or deflected will depend on the nature of the surface and the angle of the shot. If you are shooting at an area that is too absorbent or too reflective, try adjusting the angles to "finesse" the piece and achieve your welding goal.



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