

Tips for Precision Laser Welding

by Bob Staley

A bench jeweler employing relatively simple practices can use a laser welder to accomplish basic tasks more quickly and efficiently. Bob Staley of Atlanta, a laser user for the last eight years and a bench jeweler for 27 years, offers the following tips.

It's Okay to Be Tacky: Holding Parts for Soldering

Use the laser to tack parts in place before soldering with a torch. Shanks, crowns/heads, prongs, and wires can be positioned exactly where you want them and won't move during the soldering process.



Try this technique, which is especially helpful when assembling platinum parts: Tack the parts with the laser where you want them to be (1), and then cut snippets of platinum solder and laser tack them where you want the solder to flow (2). Use your torch to flow the solder into the joints.

The nice thing about this is that all the solder snippets can be placed at one time and then can be flowed with the torch all at once. Also, you can use the same temperature solder for the whole assembly rather than using solders that flow at different temperatures for each section.

There is Strength in Cleanliness:

Remove All Old Solder

Residual solder can be a real problem when laser welding (3). Your weld will not be strong if it is contaminated with residual solders that flow at a much lower temperature than the host metal. White gold solder on platinum and lead or soft solder on yellow gold are espe-

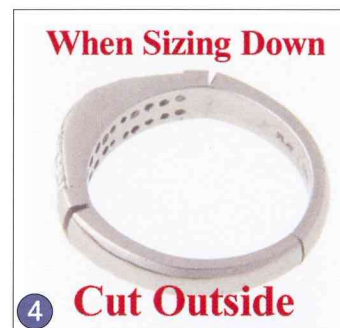


cially common. Remove any traces of solder, even if it means cutting out a contaminated section and replacing it with uncontaminated new metal.

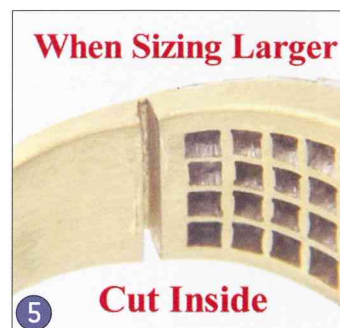
A Source of Relief: Cut Stress Joints When Sizing

Cut stress joints when sizing rings with broad bridges or under-galleries to reduce the risk of stones coming out during sizing.

Cut the stress joint on the side of the shank that will open when bend-



ing. If you are making a ring smaller, cut the joint on the outside (4). If you are making a ring larger, cut the joint on the inside (5). This is the opposite of the technique you would use for torch soldering. You want an open joint so you can penetrate the weld zone and get a strong "through and through" weld.



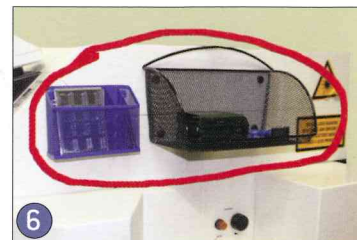
Before You Redial: The Laser May Just Need a New Angle

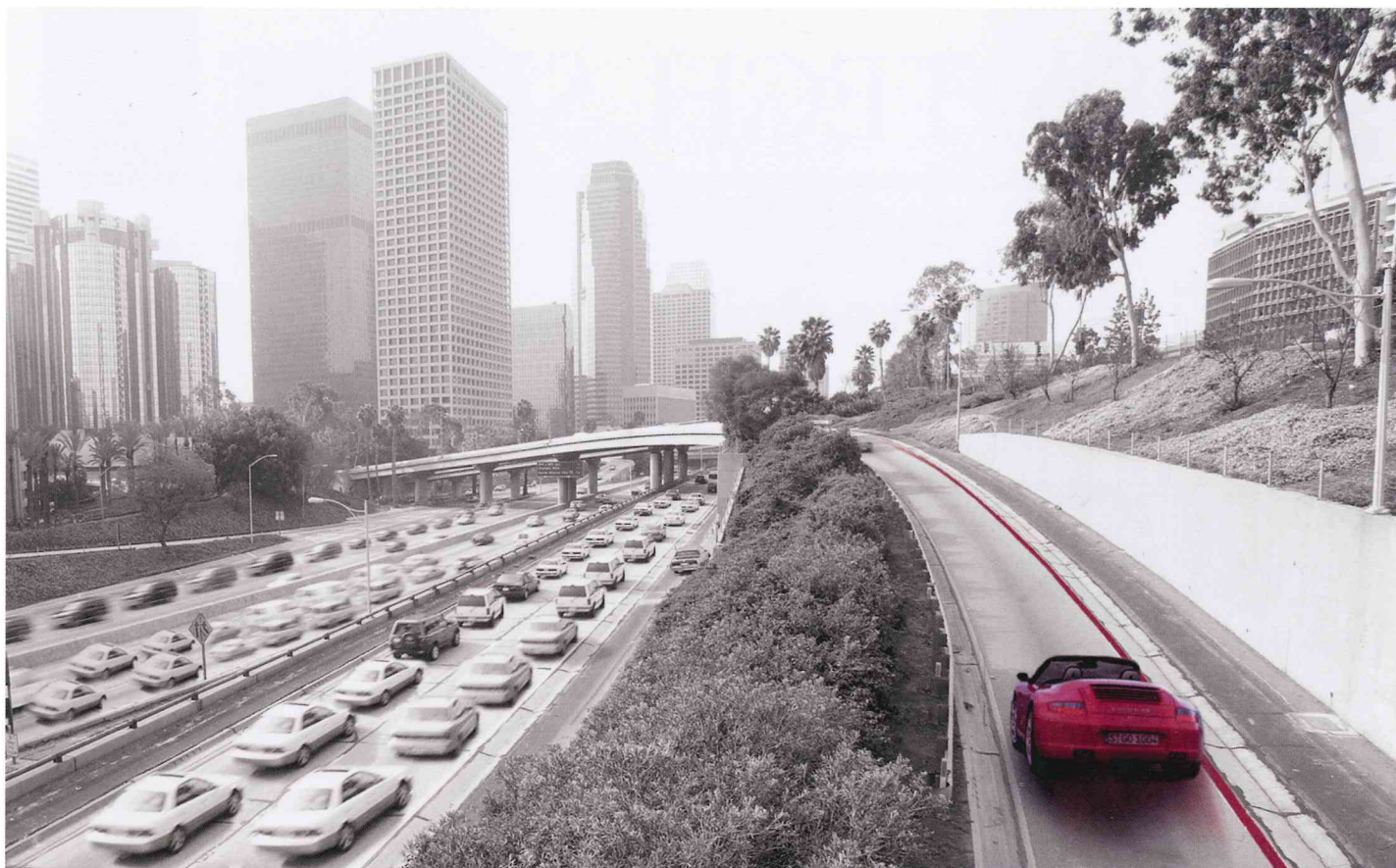
So you are welding along and all of the sudden the laser stops welding, but you are still shooting the piece. Before you change the parameters, try shooting at a different angle. This might change

the way the metal reacts to the laser pulse.

Neatness Counts, and Magnets Help Achieve It

As with any workspace, you'll be more efficient if you keep your laser welder operations neat and organized. Use magnetic baskets to hold tools and parts (6). Just stick them on your laser wherever you need them. Your favorite office supply stores should have magnets for sale.





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