

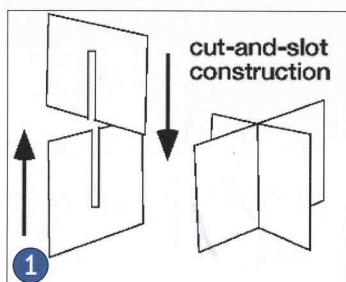
Tips for Soldering Set-Up

by Charles Lewton-Brain

The ability to hold parts together securely for soldering is essential for jewelers. In factories where soldering is done on a conveyor belt, workers may secure parts with titanium jigs to which solder will not stick. Smaller shops may wish to try some of the following methods outlined by goldsmith and jewelry consultant Charles Lewton-Brain of Calgary, Alberta, Canada.

Holding Tight: Lasers and Jigs

Repetitive production soldering in a small studio sometimes requires jigs similar to those used in factories. Goldsmiths will often use an investment jig. Lasers and fusion welders that can tack pieces together are another option, ensuring that nothing will move during soldering. Antique electric



soldering machines can be used in a similar way but may require a lot of practice to use well, and they are limited in the size of components they can handle.

Regardless of the method you choose, you can make your task easier by keeping the parts being

joined to a minimum. Instead of working entirely with separate pieces, score and bend pieces of metal as often as you can to fashion the shapes you need. You can also use cut-and-slot construction [1] to hold metal together during soldering.

Get Wired for Soldering

For jewelers without such tools, traditional techniques for holding pieces together may help.

Soft iron binding wire and stainless steel wire [2] are often used to tie pieces together for soldering. Stainless steel has several advantages over iron: Because you can put the object into the pickle without risk of a copper plating reaction, you can check whether joints are thoroughly soldered before unbinding it. Stainless steel also better resists burning through during soldering, and heat-oxidization helps prevent solder from



sticking to it.

Iron wire stretches a little better than stainless steel, however, which can make tightening a little easier.

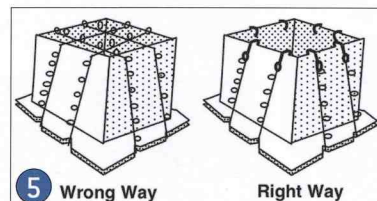
Eliminate Risks: Do the Twist

Always use wire that's thinner than the sheet you are working with, because iron or steel will not expand and contract at the same rate as silver or gold alloys. If too thick, the heated wire can bite into the metal being bound, causing significant damage. You can eliminate this risk by using wire twisted into a cable. Cable will expand and contract at a rate that will spare your precious metal of any damage. It also won't burn through during soldering,



which tends to happen with single-strand wire at the least opportune moment.

To create cable, make a long loop of wire, place the closed end in a flex shaft and



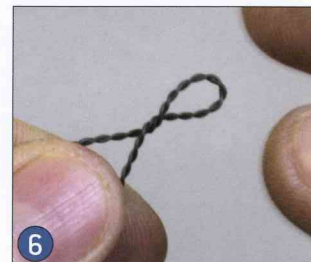
twist to the desired tightness [3, 4]. Don't leave your finger in the loop when doing this!

Be careful not to bridge open spaces in your item with binding wire. When the object gets hot and the precious metal softens, pressure on an unsupported area from the binding wire can bend it [5].

Fix Tension Problems: Get Loopy

Another issue with binding wire is that when it's just about tight enough, it snaps. To be able to tighten any wire sufficiently without it breaking, make small "tension loops" in the wire [6].

For small soldering projects, a single wire with tension loops every 5 mm or so will work. Larger projects should be done with cable with the loops spaced farther apart. Each loop is then tightened individually, which lets you bind objects very tightly.





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