

Working with Hinges

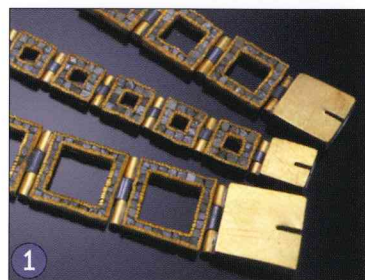
by Charles Lewton-Brain

At some point, every jeweler will work on a hinge. One of the most ancient ways to join metal and create flexibility, hinges are found in all types of jewelry—necklaces, pendants, bracelets, earrings, rings, pins—as well as in silversmithing applications such as coffee pots, tea pots, and boxes. As noted educator/metalsmith Charles Lewton-Brain says, “If you have an item that needs flexibility or mobility, you have a candidate for a hinge.” In this Tech Sheet, Lewton-Brain—the author of *Hinges* and *Hinge-Based Catches for Jewelers and Goldsmiths*, published by his own Brain Press in Calgary, Alberta, Canada—offers some fundamentals on how to work with these common linkage systems, as well as a few tips to make that job easier.

Knuckling Under:

Creating Strong Hinges

Most hinges have odd numbers of joints (or knuckles), with the standard being three. (Figure 1 shows several three-knuckled hinges incorporated into bracelets designed by Todd Reed.) Usually, all three knuckles should be



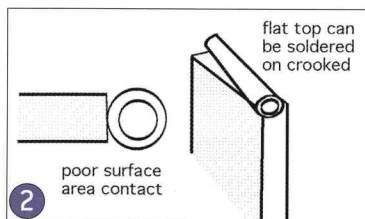
the same size. However, if you want to vary the sizes for aesthetic reasons, remember that the middle knuckle should be at least as long as the outer ones. If it isn't, the hinge's strength will be compromised; there will be insufficient contact area between that

knuckle and the jewelry part to which it's been soldered, and the stresses of daily use will ultimately tear it away. However, be wary of extending the middle knuckle too much; extremely narrow end knuckles can also be subject to damage, although much less frequently.

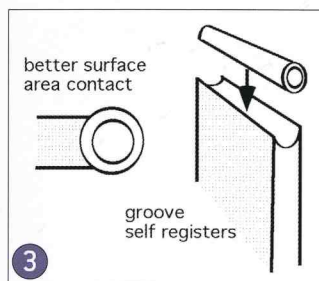
In the Groove:

Attaching Tube Hinges

When constructing a tube hinge, jewelers sometimes will solder the round tube to a flat metal surface. This not only leads to a limited amount of sur-



face area contact between the two pieces, but also opens up the greater possibility that the tube might be soldered at an angle [2]. To avoid these pitfalls, try grooving the flat metal edge before



attaching the tube. This increases the surface area contact between the tube and the metal, improving the joint strength. It also enables the tube to nestle against the flat metal, ensuring that both pieces lie in the same plane [3]. I usually groove the metal with a separating disc followed up by a round needle file or chenier file. To avoid over-filing the ends of the groove, concentrate on filing the center only—the ends will take care of themselves. The result will be an even groove.

No Squeaks, No Leaks:

Choosing a Lubricant

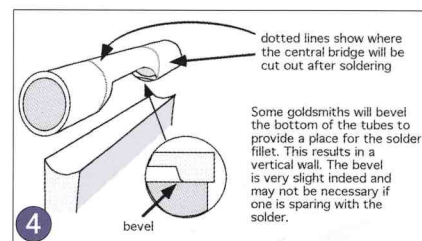
Every hinge pin needs lubricant—but it can't be oily or greasy, it can't leak or drip onto the user's clothing, and it can't evaporate. The solution? Try rubbing ordinary graphite pencil lead inside the rotator knuckles. Graphite, unlike oil, will not leak out on clothing or evaporate. It will be there for the life of the hinge, and can extend a hinge's functioning considerably.

Bridging the Gap:

Aligning Outer Knuckles

As a teacher, I've seen many students solder separate hinge knuckles into a solid lump, all because they were following instructions from books that said, to ensure alignment, all of the knuckles should be soldered to the connecting pieces at the same time. This is asking for trouble.

To avoid such mishaps, solder the outer knuckles first, using a “bridge” to keep them aligned [4]. Mark off the dimensions of the three knuckles on the tube, then cut away a bottom portion



of the center section, angling the two side cuts inward. (Some jewelers also bevel the bottom of the tubes; see figure 4.) Once you have soldered the two outer knuckles in place, cut away the bridge. You can now cut and fit the center knuckle, then solder it in place with the hinge separated (although checking repeatedly to ensure it is correctly placed). This will eliminate any chance of soldering mishap.

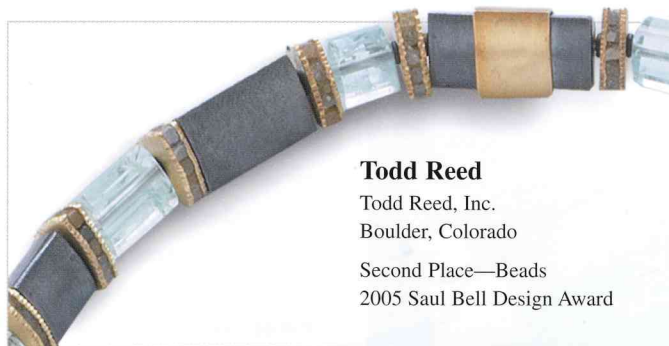
They lay on the

windowsill in a perfectly disjointed line. Each link was made but the piece was not whole—the energy wasn't right and Todd would not force it. It would be finished when it was ready to be finished.

Glancing up periodically from the bezel he was working on, he peered over his glasses at the detached bracelet, furrowed his brow and thought, "No, not yet." Tranquilly counting the number of file strokes in his head, he suddenly stopped and reached for the links, placed them in his hand and began to walk around his studio—being with them, connected, harnessing their raw energy.

He sat down at his bench and began to work. Piece by piece it came together. The hinges matched up perfectly; each link flowed seamlessly into the next. It was time.

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Todd Reed

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